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THE

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DUBLIN JOURNAL

OF

MEDICAL AND CHEMICAL SCIENCE;

EXHIBITING

A COMPREHENSIVE VIEW

OF THE

LATEST DISCOVERIES

IN

MEDICINE, SURGERY, CHEMISTRY, AND THE COLLATERAL
SCIENCES.

VOL. IV.

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MEDICAL AND CHEMICAL SCIENCE

A CONTINUOUS VIEW

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Dr. William Adams' paper in reply to that of Dr. Johnson has been unavoidably postponed, but shall appear in the next Number, as also those of Drs. Osborne, Patterson, and Colvan.

We have received for review Dr. Evory Kennedy's work on Obstetric Auscultation, &c., an analysis of which shall appear in the next Number.

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ERRATA, Nos. XI. XII.

- Page 174, line 1, *for* is not considerable *read* has been very considerable.
 — 174, — 16, *for* firmer pressure *read* firm pressure.
 — 175, — 8, *for* drops *read* doses.
 — 326, — 4 from bottom, *for* moribund *read* morbid.

THE
DUBLIN JOURNAL
OF
MEDICAL AND CHEMICAL SCIENCE.

1 SEPTEMBER, 1833.

PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*Observations on Periostitis Synovitis, &c. &c.* By
EPHRAIM M'DOWEL, M.D., M.R.I.A., one of the Surgeons of the Richmond Surgical Hospital.

(Continued from Vol. III. page 394.)

CASE 7th.—For the following interesting case of Idiopathic Synovitis, I am indebted to my friend Mr. Adams.—Matthew Hayes, æt. 16, a labourer, was suddenly seized on the 21st of April, 1832, about 2 o'clock in the afternoon, with severe pain in the left ankle: while at work, it became so severe, as to compel him to take to his bed, and continued to increase during the night. When visited by Doctor Cuthbert on the following day, pyrexial symptoms ran high, but there was no headach: there was some swelling of the ankle joint; the pain, however, was reported to have been so severe, that he had not had a moment's sleep, or remission from it, from the instant of its first invasion. Besides general attention to the state of the skin, and digestive

organs, a number of leeches were directed to be applied to the ankle: the degree of debility was such, as to forbid the employment of general bleeding. Indeed before the leeches had been long applied, the boy became evidently confused, and by the time they were removed, he became faint and weak, and his intellectual faculties were so disordered, that he did not know even his nearest relations. About 5 o'clock on the third day of the attack, he made a few convulsive sighs, and expired: his illness occupied a period of about 50 hours, and during this time, his only complaint was the agonizing pain of the ankle joint.

Post mortem examination.—The serous membrane of the pericardium whitish, and some fluid in its cavity; an opaque white spot, of the size of a shilling, on the anterior part of the right ventricle. There was some fluid in the ventricles of the brain: the fourth ventricle was distended with fluid; the viscera of the other cavities were perfectly healthy.

ANKLE JOINT. The extensors of the toes were displaced by the distention of the joint, with a turbid, oily, synovial fluid, in colour and appearance like weak broth. In the interior of the synovial sac, there was no false membrane, no trace of ulceration, nor any unusual vascularity of any of the surrounding structures.

CASE 8.—*Acute Periostitis of the orbit, terminating in inflammation of the brain, and of its membranes.*—Mary Spencer, æt. 22, admitted into Hospital February 7th, 1833. About a week before her admission, she was attacked suddenly and severely, with catarrh, followed by violent pain, deeply seated in the right orbit; and in two days the upper lid became swollen. Two days previous to admission, she had a severe rigor, and has been feverish and almost sleepless since the commencement. On admission, the upper lid was enormously swollen, there was corresponding protrusion of the eye, and considerable œdema of the conjunctiva. An incision was made through the broad ligament of the tarsus, into the orbit, and

a considerable quantity of brownish-coloured matter evacuated. Ordered, an emollient poultice, and a purgative mixture.

9th. Inflammation and tension of the lid increased. Complains of a dull deep-seated pain; tongue much loaded; thirst; nausea; pulse 100; but little discharge.—36 Leeches round the orbit.

℞ Sulphatis Magnesiae ℥ i.

Infusi Rosæ ℥ vii. ℥.

Sumat cochlearia duo ampla 2dis horis usque ad alvi solutionem.

10th. No improvement, bowels still confined; the incision is sloughy; some erysipelatous redness of the opposite lid. Ordered, a calomel bolus, and a purgative mixture.

11th. Bowels free, pulse 120; swelling stationary; discharge from incision scanty; tongue loaded; great thirst; less pain; slept some last night. Haust. anod. H. S. Twelve grains of Calomel, with one and a half of Opium, in 9 pills; one every fourth hour.

12th. Swelling less; troublesome short cough; rested better.

Vesicat^m. inter scapulas.

℞ Lactis ammoniaci ℥ vi.

Syrupi Scyllæ ℥ vi.

Tinct. Hyosciami ℥ iss.

℥ Sumat Cochleare amplum urgente tussi.

15th. Cough better; tongue white, bitter taste in the mouth; bowels free; nausea and vomiting occasionally since yesterday; rigors; skin hot; pulse 156, and very feeble; healthy and copious purulent discharge from the orbit, and subsidence of swelling. Pills of calomel and opium to be omitted. Ordered, saline effervescing draughts, an emollient enema, and a grain of the watery extract of opium, at bed time.

16th. Cessation of vomiting; pulse 140; rested well; complains of much debility.

℞ Mist. Camph. ℥vi.

Carb. ammoniæ 3ss.

Spiritus ætheris oleosi 3 iii. = ℥ i. 4tis horis.

Repr. Pil. Opii. H. S.

17th. Fullness and swelling in the right parotid and temporal regions; raved last night; is very talkative; uneasiness in head; vertigo; aversion to noise; forehead intensely hot; pain in the left lid and eye-brow, slight swelling. Twenty-four leeches to be applied round the left orbit; a blister to the nape of the neck; sinapisms to the feet; to omit the mixture and pill.

18th. Raved all night; increased swelling of the left lid; left eye protruding; œdema of conjunctiva considerable; impairment of both vision and hearing; pupils dilated and sluggish; no pain in the head; increased fullness of the parotid regions from extension of superficial erysipelas. The leeches and sinapisms having been through mistake neglected to be applied, they are now ordered to be immediately employed.

19th. Raving; pulse rapid, thready, and irregular; breathing laborious; twitchings of the muscles of the face; dilatation of the pupils increased; blindness; a blister ordered to be placed between the scapulae, and also one on the inner surface of each thigh. In the course of this day the stupor increased, and on examination of the forehead, a livid discoloration of the skin and a puffy tumour, were noticed about an inch above the right orbit. The periosteum was found separated from the bone for a short extent: the trephine was applied, and a quantity of matter was given exit to. The dura mater was unhealthy at this part, and somewhat sloughy. An incision was next made into the left orbit, and exit given to a considerable quantity of unhealthy matter. The operation was followed by a considerable improvement in the patient's condition. She became much more sensible, but in a short time relapsed into a state of stupor, and died early on the following morning.

Examination of body five hours after death. Some lymph

and purulent matter on the surface of the dura mater correspond to the right half of the cranium, inflammation and softening, with some purulent deposit on the extremities of both anterior lobes; an abscess of considerable size, occupying a portion of the left middle cerebral lobe, and containing a greenish and rather fetid matter. It was surrounded by an imperfect cyst, formed by lymph. The contiguous portion of the brain was vascular. Purulent matter was diffused over a considerable portion of the right cerebral hemisphere; pia mater pale; a little fluid in the ventricles. The periosteum separated from the roof of both orbits, but no corresponding detachment of the dura mater; lungs healthy; two ounces of fluid in the pericardium.

Inflammation of the fibrous tissues in the young and irritable habit, may be followed by synovitis of a distant articulation, as is exemplified in the following case:

CASE 9.—Anne Sheridan, ætat. 9, admitted Saturday, Dec. 1, 1832, into the Richmond Surgical Hospital, was perfectly healthy up to a period of five days before her admission, when she was suddenly seized with a severe pain a little above the right outer ankle. She passed a very restless night, and on the following morning, a small bright red spot appeared in the spot where she had felt the pain. The redness and swelling extended during the day as far as the knee, accompanied by much increase of fever. During the night she had a rigor, and vomited twice, next day a large gangrenous vesicle formed on the spot which first became red. On admission, there were ill-defined patches of erysipelatous redness as high as the knee. From the foot to the groin, the limb was much swollen and very tense, and without fluctuation. The inguinal glands were enlarged and tender; the dorsum of the foot was œdematous, and numerous small vesicles appeared about the ankle, containing a sanious fluid. The large discoloured vesicle had burst, the cutis was livid and gangrenous looking, the tongue loaded; much thirst, and bowels confined; pulse rapid and feeble; feet cold; the countenance as usual in cases of acute

synovitis, indicative of great suffering. The fascia of the leg was divided in two places, through the upper one the gastrocnemius muscle protruded ; through the lower, which was made over the fibula, and carried below the plane of the ankle joint, a large quantity of tolerably healthy purulent matter issued. The sub-fascial cellular tissue was sloughy, a large poultice was applied, stuping directed, and a draught with castor oil given.

December 2nd. Much improved in every respect, the discharge from the lower incision was very copious and of two kinds ; from the upper part, healthy matter was pressed from the fascia ; from the lower incision, a thin, dark, serous fluid in considerable quantity issued, and had undermined the fascia to some extent. Poultices continued.

4th. Discharge copious ; complains of *very severe pain corresponding to the patella of the opposite side* ; no swelling or uneasiness on pressure. Poultices continued.

5th. Labours under diarrhœa ; a considerable portion of tendon has sloughed away from the leg.

R Hydrargyri cum Creta gr. ii.

Pulv. Ipecac. Comp. gr. i.

Ft. Pulv. 4tis horis repetendus.

Rice diet.

6th. Diarrhœa has ceased ; fever nearly gone.

9th. Complains of severe pain in the left knee, and is again feverish. On examining the left hip joint, it was found tender all over, swollen, the superficial veins were turgid ; pressure on the trochanter or motion of the limb caused violent pain in the joint, and extending to the left patella ; fulness in the groin and tenderness from irritation of the lymphatic glands, the thigh flexed on the pelvis ; diarrhœa has recurred. Six leeches behind the trochanter ; chalk mixture with tincture of opium. She was removed two days afterwards from the hospital by her friends.

March 8th, 1833. Visited at her dwelling in Manor-street, and the following report made of her state, viz. : flattening of the left nates, and some elongation of the limb, independent of obliquity of the pelvis, which exists to a considerable degree, much enlargement of the thigh, apparently depending on great thickening of the periosteum ; great pain complained of in the joint, and occasionally shooting to the left knee. The incision in the right leg, which healed after she left the hospital, ulcerated, and a portion of the fibula has exfoliated.

The following is another example of acute synovitis terminating fatally ; I am indebted to my friend Dr. Gordon Jackson for several particulars of the case :

CASE 10.—James Brett Crawford, ætat. 11 years, was thrown down by a school-fellow on the 20th of April, 1833. He, at the time, complained of being a good deal hurt ; on the 22d he was unable to kneel down. He was that evening placed in a warm bath, and passed a restless night. On the following day he found much difficulty in walking, from the exquisite pain in his right thigh and hip : he was again placed in a warm bath, and his bowels opened : he passed a sleepless night, and in the morning had much fever with headach, and hot, dry skin. The right thigh and buttock were swollen, and of a light red colour ; the symptoms increased till the evening of the 26th, when he was attacked with herpes of the face, chest, and arms : up to the evening of the 28th, he had not been submitted to any medical treatment. My pupil, Mr. Brabazon, saw him at this time ; his report was as follows : he appeared much emaciated, his countenance indicative of the deepest anxiety and suffering. Tongue dry, and brown sordes on the teeth and gums ; skin pungent ; pulse feeble, and so rapid as not to be counted ; frequent screaming and delirium ; the slightest touch on any part of his body seemed to put him to torture ; there was such tenderness on pressure over the entire abdomen, as to lead to the suspicion, that acute peritonitis was present. The right thigh and glutæal region were much

swollen and very tense ; skin slightly reddened, and the foot œdematous ; the veins about the hip numerous and turgid. He complained of intense pain in the *left shoulder joint*, and here also the veins were much distended. He was distressed by an incessant short cough and dyspnœa ; he, at this time, had diarrhœa, the eruption had scabbed. He was directed to be removed to hospital, which was not done till the following morning ; he was taken from it in a few hours, and died comatose that evening. *No examination would be permitted.*

Inflammation of the brain or of its membranes frequently occurs in the progress of most acute diseases attended with fever. Cases were detailed in the observations on Synovitis, &c. published in the last number of the Dublin Journal, of similar affections occurring in the progress of acute inflammation of the synovial and fibrous membranes. Such affections, and also dangerous metastases, are of much more frequent occurrence in the young. For example ; in the fourth volume of the Dublin Hospital Reports, a case is given by Mr. Adams, of metastasis of acute rheumatic inflammation from the synovial membrane of the extremities, to the serous membrane of the heart ; and in the second volume of the same periodical, I have given a case of rheumatic inflammation of the synovial membrane of the knee, terminating in peritonitis. Inflammation of the brain or of its membranes occurs also in the progress of chronic articular disease, particularly in the strumous habit, and proves in general rapidly fatal, by causing effusion of serum or lymph, more rarely by suppuration and softening of the brain.

In the case next to be briefly noticed, suppuration of the surface of a portion of brain took place ; but the case is also of interest, on account of the unusual course which the matter secreted in a diseased hip joint took. I am not aware of its being recorded, that an iliac abscess may result from this affection, yet in four cases I have found it to occur, the fluid escaping through an opening on the inside of the capsular ligament passes upwards behind the psoas, and ascends into the iliac

fossa, detaching the muscles from the bone. In such cases we have considerable fulness in the groin, which can be traced upwards behind Poupart's ligament: from the stretching of the psoas and iliacus muscles the femur is flexed considerably, and from the stretching of the filaments of the anterior crural nerve, more neuralgic pain attends this case than we usually find in disease of the hip joint, accompanied with abscess extending in other directions. In general, the matter is prevented from passing into the true pelvic cavity, by the connexion of the fascia iliaca to the pectineal line, the iliac vessels are displaced, become flattened and adherent to the sac, from the compression of the vein, much more œdema of the limb is present than in ordinary cases. The cæcum or the sigmoid flexure of the colon may be considerably displaced, or united to the sac. The matter may, however, escape into the pelvis by ulceration of the fascia iliaca taking place. It passes behind the vessels, and accumulating may compress the bladder and rectum, which then form the inner wall of the abscess; or the bladder alone, the inflamed and thickened peritoneum, a portion of the small intestines, the side of the pelvis, and the abdominal muscles, anteriorly, may form its parietes.

In a very interesting case of iliac abscess, which occurred last year in the Richmond Hospital, and which I shall briefly notice, ulceration of a portion of the ileum, adhering to the wall of the abscess occurred, and its contents, after being poured into the abscess, escaped externally through a fistulous opening near the spine of the ilium; ulceration also of the external iliac artery took place, about an inch and a half above Poupart's ligament, and sudden death resulted from the blood escaping in large quantity into the cavity of the abscess, forming a large mass of coagulum, with a considerable quantity in a fluid state. This double lesion is very remarkable, the preparation is preserved in the Museum of the Richmond Hospital. The ulceration of the ileum commenced on the mucous surface, at least this may be inferred from finding a small oval ulcer of the

mucous membrane, in an early stage of its progress, contiguous to the perforation; the ulceration of the artery, on the contrary, appeared to have commenced on the exterior, the cellular and fibrous coats being destroyed to a greater extent than the internal; there was no other disease of the arterial system.

In two cases of hip joint disease that came under my observation several years since, the matter passing into the pelvis through the bottom of the acetabulum, accumulated in such quantity as to compress the bladder, and cause retention of urine, requiring the daily use of the catheter. This route for the matter is not, however, uncommon, and in its progress it may form a tumour of considerable size by the side of the rectum, and it occasionally bursts into the cavity of the intestine. Sir A. Cooper mentions the latter occurrence, and in one instance I had an opportunity of observing it.

To my friend Mr. Speedy, a licentiate of the College of Surgeons, I am indebted for the following very interesting letter, respecting a case of psoas abscess, arising from caries of the hip joint:

“ On the 11th of January, 1829, I made an examination of the body of a soldier named Poultenay, in the presence of Mr. Adams and of Surgeon Gibson, Grenadier Guards. At the outside of the thigh and in Scarpa's angle, a large fluctuating swelling was perceived, which evidently had connexion with the abdominal cavity. On laying open the abdomen, the sheath of the psoas muscle was enormously distended with an unhealthy pus, it was also much thickened, the matter had burrowed under the pelvic fascia through the levator ani, and obturator internus muscles, and passed through the obturator foramen, among the adductor muscles of the thigh; considerable absorption of the muscular fibre had taken place; it had also passed out through the great sciatic notch. No disease existed in the vertebræ, which led to examination of the hip joint: the head of the femur and the cavity of the acetabulum were completely stripped of cartilage, and in a carious state.

The vena cava close to the iliacs was adherent to the anterior and internal part of the sac, and on being slit open, a communication was found between them ; a considerable quantity of pus was found mingled with the venous blood as high as the diaphragm ; the opening would have admitted a small sized quill."

The case was rapid, the symptoms obscure, and death occurred suddenly.

CASE 11.—*Hip joint disease, iliac abscess, and cerebral inflammation.*—Alexander Clarke, ætat. 17, admitted into the Richmond Hospital Dec. 19, 1829. Eighty days ill ; considerable swelling about the left hip joint ; integuments shining and tense ; much general pain and tenderness ; the limb shortened an inch and a quarter, inverted and flexed on the trunk ; swollen glands in the groin, and much tenderness ; pain shooting to the knee ; motion intolerable ; much constitutional disturbance. The disease commenced *suddenly*, with severe pain in the joint, which increased, and combined with frequent startings of the limb, has deprived him of sleep for several weeks : exposure to cold from lying on the wet grass caused the disease.

January 7th. By repeated leechings, perfect rest, and the use of colchium, bark, and opium, the local and constitutional symptoms were all benefited. At this time he fell on the diseased hip, and the injury he received was succeeded by an aggravation of all the symptoms.

21st. Deep abscess in the groin, extending above Poupart's ligament, now evident ; hectic symptoms with frequent diarrhoea and vomitings alternating.

April 2nd. The abscess in the iliac fossa much increased, tumefaction surrounding the joint lessened, shortening and inversion of the limb increased, with much œdema of the foot and leg. He became suddenly insensible, the left arm totally paralyzed, the right convulsed, and constantly in motion ; twitchings of the muscles of the face ; supine posture ; involuntary

discharges. He remained in this state for several days, when he died.

On examination, purulent matter was found on the surface, and between several convolutions of the right hemisphere; the neighbouring portion of brain *softened* and vascular; no effusion into arachnoid sac or into the ventricles. The left iliac fossa was entirely filled by an immense abscess, lying between the muscle and bone, passing down under Poupart's ligament, as far as the lesser trochanter; the iliac vessels and the anterior crural nerve were pushed forwards, half an inch below Poupart's ligament; a process of the abscess passed outwards and backwards, communicating with the hip joint; the muscles posteriorly were matted to the walls of the abscess, and thinned. The acetabulum was very much enlarged, the head of the femur was drawn to its highest part, and from the destruction of the capsule and of the ligamentum teres, was quite moveable; the cartilage of the joint was destroyed, the bones rough, vascular, and coated with lymph. The contents of the abscess were a very fetid, viscid, puriform fluid with flakes; the sigmoid flexure of the colon was much displaced, and the left extremity of the transverse arch had contracted an adhesion to the cyst of the abscess.

CASE 12.—*Hip joint disease, iliac and pelvic abscess, ulceration of the ileum, and rupture of the iliac artery.*—Patrick Kenny, ætat. 18, was admitted into the Richmond Hospital September 18, 1832. Six years since he received an injury of the right hip from a fall, in consequence of which an abscess formed in the upper part of the thigh; about two months afterwards, another formed in the groin, and burst at the nates and outer part of the groin, a little above Poupart's ligament. Here a fistulous opening exists, and a thin purulent fluid constantly flows from it; it leads into the iliac fossa; the other openings have healed. The limb is shortened and everted; great emaciation; a swelling extends from the iliac fossa into the pelvis, and

the abdominal parietes are matted to it; night sweats, diarrhoea, and a slight cough exist.

October 19th. A discharge of feculent matter (inodorous) took place suddenly to-day from the fistulous opening in the groin.

27th. Died suddenly this morning.

On examination, the peritoneum was found thickly studded with scrofulous tubercles of various sizes, and closely adherent to the intestines and other abdominal viscera; a large tumour was situated at the lower part of the abdomen, its walls formed by thickened peritoneum; on cutting into it, its contents were found to be chiefly coagulated blood; the sac was covered with a tenacious lymph-like substance, and also contained a bloody fluid mixed with feculent matter. The tumour extended into the true pelvis; the source of the hemorrhage was found to be a slit-like aperture, nearly half an inch in length in the external iliac artery, about an inch and a half above Poupart's ligament. Another opening, an inch in diameter, was found in the ileum; several small ulcers of the mucous membrane existed near it; a coagulum was found in the opening in the artery, and blood partly fluid and partly coagulated was found in the cavity of the intestines; the fistulous canal of the abscess passed behind the vessels. The cartilages of the hip joint were destroyed by ulceration, and granulations springing from either surface had partly coalesced; an abscess was found in the iliac fossa, where the sigmoid flexure begins; the colon returned on itself, formed a second transverse arch, and ended in the rectum which passed down on the *right side* of the middle line of the sacrum; a few scattered tubercles were found in the lungs.

The practice of opening abscesses, connected with the larger joints *particularly*, is, in general, decidedly objectionable; but when we consider the fatal consequences which may result from the unchecked progress of the deep iliac abscess, and take into account the very great sufferings of the patient from pressure of the anterior crural nerve and of its filaments, I believe

this to be a case in which surgical interference is called for. The puncturing of this abscess, however, requires much caution, in the superficial purulent collections in the iliac fossa; the peritoneum is detached, and pushed upwards and inwards sufficiently to permit of the incision above Poupart's ligament being made with perfect safety; not so in the deep collections, there is then no separation of the peritoneum, and the opening must be made below Poupart's ligament, and of course with great caution.

The following case illustrates the good effects of opening an abscess of this kind, even under, apparently, the most unfavourable circumstances.

CASE 13.—George Nugent, ætat. 12, February, 1833. Three months since received a kick in the right groin, which was soon followed by much swelling of the joint, and pain in the situation of the great trochanter, the leg became bent upon the thigh, and any attempt at extension caused severe pain. He was admitted into the Richmond Hospital, and in a few weeks, by appropriate treatment, all symptoms of disease were removed; he remained well till the latter end of December, 1832, when, without any apparent cause, he was attacked again with violent pain in the groin, at the inside of the articulation, which was afterwards moved to the site of the great trochanter, and he became unable to bear any weight on the limb, or even put the toes to the ground. The usual appearances of morbus coxæ were present, the pain however was confined to the articulation, and did not shoot down the limb or affect the knee, and some shortening was ascertained by measurement to exist. The inguinal glands were much swollen, and deep fluctuation was to be felt above and below Poupart's ligament, in the line of the psoas muscle. Hectic fever, accompanied with diarrhœa, alternating with night perspirations, developed itself.

Feb. 12th. Ordered two grains of sulphate of quinine, with two of rhubarb and two of the hydrargyrus cum creta, three

times daily ; a poultice round the joint, and three ounces of wine daily.

17th. The actual cautery applied behind the great trochanter. In three days after its application, all pain in or about the joint was removed.

21st. Diarrhœa continues ; directed twelve grains of sulphate of quinine with one of opium in nine pills, one three times daily.

28th. Swelling of thigh increased ; the iliac abscess extending itself upwards and laterally ; stinging pains in the thigh and about the knee, pain in the joint if the limb be moved ; no diarrhœa.

March 13th. For some days impairment of appetite, nausea, and tendency to tenesmus and diarrhœa, with occasional stinging pains in the abscess ; the sore caused by the cautery has become irritable ; it was directed to be healed, and the chalk mixture with opium directed.

21st. Iliac and crural abscess enlarging considerably ; health more impaired ; emaciation increasing ; kali purum applied to open the abscess below Poupart's ligament.

31st. Slough not separated ; abscess much larger ; severe suffering for several days past, from neuralgic pain extending from the groin down to the leg, caused by stretching of the filaments of the anterior crural nerve ; abscess opened valvularly, and upwards of eight ounces of thick purulent matter evacuated ; the wound was carefully closed, and immediate relief was obtained.

April 1st. Countenance much improved ; freedom from pain continues ; pulse 108 ; diarrhœa has ceased.

6th. Partial perspiration limited to head and neck ; integuments of the extremities dry and scabrous. The wound has ulcerated, and a quantity of thick matter was evacuated.

9th. Perspiration and diarrhœa ; matter still healthy, and in small quantity evacuated, both through wound and through the caustic opening ; pulse 116.

16th. Diarrhœa continues.

℞ Superacetatis plumbi gr. vi.

Opii gr. ii. in pilulas sex æq.

Sumt. unam ter in die.

Early in May the diarrhœa had almost ceased, when he was severely attacked by the prevailing influenza, for which it was necessary to blister his chest twice ; he was discharged on the 13th of May at his own request, suffering with a frequent short cough, pain in the right side of the chest, with dullness on percussion of the right infra-clavicular space, feebleness of the respiratory murmur, and imperfect pectoriloquy.

June 28th. General health perfectly good ; has become fat ; the diseased thigh is one-fourth of an inch longer than the sound one ; all the soft parts at the upper and anterior part of the thigh are matted together ; the superficial veins are turgid ; some flattening of the nates ; no pain whatever ; very slight lameness.

ART. II.—*Observations on certain Affections of the Septum of the Nose.* By CHRISTOPHER FLEMING, A.M., Member of the Royal College of Surgeons in Ireland, Surgeon to St. Anne's Parochial Dispensary, &c. &c.

(Read at a Meeting of the Surgical Society of Ireland, March, 23rd, 1833.)

THE frequent occurrence of diseases of the nasal fossæ, and the malignant characters which many of them possess, render their consideration and diagnosis of much importance to the surgeon.

In the present communication it is intended to direct the attention of the Society to some particular affections of the septum, different from those to which it is liable in common with the other portions of the nasal apparatus. These affections present themselves under the appearance of tumours, possessing different characters ; some contain blood, others pus, others a gelatinous fluid, and others again have somewhat of a cartilaginous consistence. The remarks I have

to make, will be confined to the two first of those tumours; the remaining shall be reserved for a future occasion, as the opportunities I have had of witnessing them have been too limited to entitle them to present notice.

The bloody tumours of the septum are, I believe, always the result of injury. They resemble common ecchymosis in other parts of the body, and are often as quickly formed, generally within the first few hours from the occurrence of the accident: they usually occupy both sides of the septum, but may be confined to one; their extent and form are very variable, the mucous membrane in some cases presenting only a flattened elevation, appearing as if raised by an uniform effusion underneath, and in others being distended to a greater or less degree. There is considerable resistance in their feel, and this, combined with extreme tension, and surrounding hardness, renders it proportionably difficult to ascertain the existence of a fluid within. I have been always able to see them, by gently pressing the tip of the nose, and dilating the nares; their colour is of a dark purple, and they present a smooth and glossy appearance: their connexion with the septum is by a broad base, with abrupt boundaries. The principal symptoms complained of by the patient, are a general fulness and stuffing of the nares, proportioned to the extent of the effusion. The following case is selected from those I have witnessed, as a remarkable example of this affection.

A gentleman, about 25 years of age, in hunting, when riding over a fence, was struck by his horse's head on the nose; at the moment there was considerable hemorrhage from the anterior nares, which, after a short time, ceased, and feeling comparatively little uneasiness, he continued the day's sport. Towards evening, and during the night, a most distressing sensation of fulness and stuffing took place, which gradually increased to such an extent, as wholly to obstruct the nostrils, and produce great annoyance. I was called to visit him the following day; the outer parietes of the nose were generally swollen, slightly

red, a little tender on pressure, but free from any appreciable contusion of the integuments. All uneasiness and complaint were referred to the state of the nares; the existence of some obstruction, in which the peculiar expression of countenance as well as tone of voice, manifestly indicated. On throwing back the head, and gently pressing the tip of the nose, each opening of the nostrils presented a tumour, tense, shining, and of a dark, purple colour, nearly filling its calibre; each tumour could be distinctly traced along its outer side, with a probe passing insensibly, by a broad base, upwards and backwards towards the septum: this appeared to form a partition between them, although a communication was suspected from the effects produced by the alternate pressure of the finger passed into either nostril, for by this means, the tumour on the opposite side was rendered fuller and more prominent. By the same manipulation, the existence of a fluid within was clearly ascertained, particularly if the nose, at the same time, was grasped at its upper part, by the fingers of the opposite hand. From the extreme local suffering which was experienced, I felt myself justified in making an opening, and accordingly punctured with a lancet the tumour in the right nostril, having first rendered it as fixed and as prominent as possible; the result was satisfactory, being attended with almost instantaneous relief. A quantity of blood, half fluid and half coagulated, escaped, and by pressure, both tumours were evacuated through the same opening, and subsided considerably: a good deal of diffused hardness and tumefaction yet remained, which prevented any accurate examination of the septum. Cooling applications, leeches, rest, and the use of some gentle saline aperients, were directed. For many days a fulness and tenderness on each side of the septum existed, in other respects no remarkable occurrence took place in the progress of the case towards its ultimate cure.

This is an extreme case, and, I should think, one very rarely to be met with. Less extensive effusions, however, occur not unfrequently, and it appears to me, that the attention of the sur-

geon is diverted from their possible existence in injuries of the nose, by the general distress complained of under such circumstances in the nostrils. Their existence immediately after the accident, escapes observation; the extravasation of blood in the nares adds to the difficulty of detection, if the effusion be inconsiderable, and absorption effects its total removal, before the general obstruction subsides. I could state many cases, where great fulness of the mucous membrane, with decided fluctuation, existed on either, or both sides of the septum, the day after a blow on the nose, with or without a wound of the integuments, or injury to the nasal bones, although no particular complaint was made by the patients: this subsided in the progress of the cases towards cure, and this, probably, is the termination of such bloody effusions under ordinary circumstances, so that the particular interference of the surgeon is not called for. Again, the diffusion of blood through the superficial structures of the nose, the existence of a wound of the integuments, and the possible laceration of the mucous membrane, may either prevent or conceal any local congestion. These different considerations do not satisfactorily explain, how the very intimate union which naturally exists between the bony and cartilaginous septum and the pituitary membrane is destroyed. When we reflect, however, on the very great extent of the septum, the extreme delicacy of its structure, and the numerous alterations in direction to which the cartilaginous portion of it, particularly, is exposed, under the violent and varying accidents which may affect it, we must admit the possibility of equally varying injuries, from its simplest contusion to its laceration, fracture, and even dislocation. The existence of any of the three last injuries, without laceration of the mucous membrane, will at once explain the cause and nature of those bloody effusions, and these latter, on the other hand, if at all poured out equably on each side of the septum, will excuse the apparent oversight of the surgeon in not discovering the exact nature of the injury. Indeed his too minute examination might derange the process

which nature had set up for the reparation of it. That such an accident may occur, even with laceration of the mucous membrane, the following case appears to me to afford a satisfactory proof.

A young man, about 23 years of age, labouring under ordinary catarrhal symptoms, applied for relief at St. Anne's Parochial Dispensary. Observing some lateral deformity of his nose, and an extensive cicatrix on its dorsum, I inquired into the cause of it. He stated, that when a boy he fell down a flight of stairs, and struck his nose against some vessel which happened to be in the way, by which it was severely wounded. On examining the nares, I found that the septum had been torn up or dislocated from its inferior attachments, to the extent of about an inch and half, that the mucous membrane had been also ruptured, and that the septum, forced to the left side, had formed an intimate adhesion below, leaving the line of its natural connexion marked by a prominent bony and cartilaginous ridge.

In the treatment of those bloody tumours of the septum we must be guided by the rules which direct us in that of similar tumours elsewhere. The principal objects to have in view are, the prevention of inflammation and the promotion of the absorption of the extravasated fluid. The remedial means to effect these are familiar to all. The necessity for evacuation by an incision is very rarely called for, and it is satisfactory to know, that it can be had recourse to without unpleasant results. I would defer it, however, until all other means had failed, and I would consider the delay favourable, inasmuch as it will allow time for the effusion of lymph, the effect of which will be to circumscribe the injury.

I beg next to direct the attention of the Society to another class of affections closely allied to the preceding, and frequently arising from the same cause ; so intimate, in fact, is the relation, that in many cases one may be considered the second stage of the other : I allude to abscess of the septum.

Abscesses of the septum are then occasionally met with as the result of injury. As such they may be acute or chronic. They may also arise independent of that cause, in which case they appear frequently to be connected with some scrofulous disposition in the constitution, or with the presence of some of the exanthemata, as variola, measles, scarlatina. The nature of the injury to the nose likely to produce abscesses of the septum varies. I think, however, they occur often where there is an accompanying wound of the integuments, and where that wound is situated near the lower extremities of the nasal bones, with or without injury to them. It usually happens, that the abscess is fully formed when the surgeon is applied to, or (if he have had an opportunity of watching the case from the commencement) that the exact situation of the inflammation escapes his observation, until it has advanced too far to prevent suppuration. In those abscesses the integuments of the nose generally partake of the inflammation. Though not always discoloured, they are œdematous and tender on pressure. The pituitary membrane is inflamed throughout, and that portion of it covering the septum is particularly turgid. Its natural secretion is also suppressed, and should any external wound be present, it looks angry and irritable. The constitution generally sympathises, and ordinary feverish excitement prevails. At an earlier or later period matter is formed under the mucous membrane, occupying either or both sides, usually both; and in proportion to the extent of the effusion, there is a tumour more or less prominent, in either or both nostrils, producing corresponding obstruction. The pain, as we might have anticipated, spreads along the mucous membrane to the frontal sinuses and lacrymal passages; hence the lacrymation and uneasy sensations in these parts complained of by the patients. It likewise occasionally spreads downwards; hence tumefaction of the upper lip, and lower margin of the septum. The appearance of these tumours is remarkable. They are smooth and shining, and of a bright red colour; very tender on pressure, and give

a distinct sense of fluctuation. They are somewhat fixed, and do not appear influenced by the ordinary acts of respiration. Their connexion with the septum is by an extensive base, and in every case I have seen there has been a communication between those on opposite sides. The following remarkable case occurred at St. Anne's Parochial Dispensary.

Michael Kavanagh, a coachman, about 40 years of age.—A fortnight previous to his application, while running across a street, and attempting to reach the flagway, he slipped, fell forwards, and in the fall struck his nose against the edge of the flagging. When he got up, he found a wound on the dorsum of the nose, which bled profusely; he had also considerable hæmorrhage from the anterior nares. The wound was dressed at some adjoining apothecary's, and for the first eight or ten days he suffered no extraordinary uneasiness in it, living intemperately, and paying little or no attention to the accident. At the expiration of this time, the wound became remarkably tender, the pain increased gradually, and extended around, particularly to the root of the nose, the eyelids, and the lower part of the forehead. The nostrils felt stuffed and obstructed, and ultimately became so much so, as wholly to prevent respiration through them. These several symptoms were accompanied with general febrile disturbance. Under these circumstances I saw him for the first time. The nose, naturally large and prominent, was rendered still more so from a general œdematous state pervading the integuments, which were tinged with a diffused dusky red hue, and were peculiarly tender on pressure; in fact he winced, at the slightest attempt to touch the nose. There was much lacrymation, and the eyelids and the lower part of the forehead partook of the general œdematous and erysipelatous disposition, which appeared also to engage the upper lip. On the dorsum of the nose, about the junction of the lower extremities of the nasal bones with their corresponding cartilages, in the site of the original wound, there was a painful ulcer about the size of half a sixpence. Its edges were

tender and much swollen, its surface excavated and irregularly granulated. On examining it with a probe, the lower ends of the nasal bones were found bare, and by altering the direction of the probe, it passed without any resistance on each side of the septum, to a considerable distance upwards, backwards, and downwards. In front two highly vascular tumours blocked up each nostril, and projected considerably beyond its margin. Those tumours were tense and polished on their surface, and so fully occupied the nostril, that they were almost fixed and unaffected by the ordinary act of respiration. By firmly compressing the nose at its lower part, a thin sero-purulent fluid could be expressed through the ulcer; by having recourse to the same means of compression at the upper part, the tumours below were rendered more tense and projecting, and by alternate movement no doubt could be entertained as to the existence of a fluid within them. The outer boundary of each was defined, and could be traced with a probe towards the median line, where the septum separated them. I made an opening with a lancet into the tumour in the right nostril. In doing so, I found the mucous membrane much thickened and œdematous: a large quantity of a thin purulent fluid escaped, and on its evacuation both the tumours subsided, leaving the pituitary membrane in loose sacculi on each side of the septum. By every means I adopted, I could not find any communication from one side of the nares to the other, although no doubt of its existence could be entertained from the disappearance of the contents of both tumours through the same opening. The man felt great relief from the operation; a dossil of lint was introduced into the opening, and the ordinary general and local remedies were directed. It would be uninteresting to note here the daily progress of the case. The most remarkable circumstances connected with it, were, the extreme difficulty found in keeping the incision made in the mucous membrane free, the almost daily necessity of tearing up its adhesions for the removal of the collection of a greater or less quantity of fluid on

each side of the septum, the slowness with which the pituitary membrane recovered its original condition and connexion, and the tediousness of the original wound in healing. About six weeks elapsed before this was effected, and it may be remarked that no exfoliation of bone then took place. It is now more than twelve months since this case occurred. I accidentally met the man about a fortnight ago, and had an opportunity of examining the nose, no exfoliation had taken place, but occasional uneasiness is felt in the cicatrix of the original wound. The central portion of the cartilaginous septum appears to have been absorbed, and to have admitted of the adhesion of the opposite surfaces of the mucous membrane to each other. This has produced a change in the form of the nose, the dorsum having fallen in in a slight degree between the tip and the extremities of the nasal bones. No other peculiarities are to be observed.

In the case which has been just now read, we have the most leading features of abscess of the septum, as the result of injury, admirably well marked. Its extent exceeded that under ordinary circumstances to be met with, and the projection through the nares was so considerable, that its character might have been mistaken, had not the wound on the nose, and the recent injury, attracted attention. My colleagues at the dispensary and Mr. Colles saw this case at the period of its occurrence, and assented to the views which I have just laid down as to the nature of it ; and further, I am happy to be able to adduce the respectable testimony of Mr. Liston of Edinburgh, in confirmation of their truth. In a work published by him since that period, one of the cases recorded bears much resemblance to this now related, not alone in its causes and symptoms, but also in its treatment and termination.

Abscesses of the septum are always to be looked on by the surgeon with anxiety. He ought to have recourse to every means in his power from the date of the injury to the nose, to prevent their formation, and when the slightest grounds exist

for suspecting the presence of matter, he should not lose time in making an opening to evacuate it. This is the only chance the patient has of escaping a tedious disease, and ultimate deformity, from the bones or cartilage partaking of it. The thickened state of the mucous membrane is to be borne in recollection in puncturing those tumours, and in their future treatment. They should be rendered as tense as possible, by firmly grasping the upper part of the nose, and in the subsequent visits the opening should be freed, as the fulness of the tumours may indicate the fresh accumulation of fluid. The discharge is generally of a thin sero-purulent nature, and in the progress of the case I have remarked, that it assumes a glairy consistence. The mucous membrane is slow in recovering its healthy condition. It is, however, materially assisted by different lotions: in the inflammatory stage, those containing lead and zinc are grateful; in the chronic, the black and yellow mercurial washes, and the diluted citrine and zinc ointments, will be found beneficial. The general local or constitutional treatment does not require any particular comment.

The Society will observe, that the preceding remarks refer solely to acute or symptomatic abscesses, but cases that have fallen under my observation have led me to imagine another form, which, in contradistinction, I would suggest to call, the idiopathic or spontaneous. These abscesses require on the part of the surgeon particular discrimination, and as far as I have been able to ascertain, they have not been described by any author. So latent is the inflammatory stage preceding their formation, that in the majority of cases the patient is not aware of their existence until they are fully formed, and even then applies more from the distressing sensations produced in the nares, than from actual pain, unless when from their great extent and tension, they excite some in the distant portions of the Schneiderian membrane. In those abscesses, I have never seen the outer parietes of the nose engaged. Their appearance is natural, and unless deformity exist from the extent of the ab-

scess, we are obliged to examine the nares for their detection. Here the only peculiarities they possess different from the symptomatic or acute, are, that there is a less shade of redness in their colour, that they are less tense, and that they bear more pressure without pain. I think also, they are much more extensive, and more likely to occur singly on either side of the septum. I have met with the case of a countryman, where not only each cavity of the nostril was occupied by a tumour, but there was considerable protrusion of the upper lip, and on everting it, an abscess exactly resembling in appearance and situation a common gum-boil, was found at the root of the septum, which, on being opened, gave exit to a large quantity of thin purulent fluid, and caused the subsidence of all the swellings. Again, I have had under my care a young lady with an abscess about the size of a Spanish nut, occupying only one side of the septum, about an inch, or an inch and half from its anterior margin. The history of the first of these cases was most confused and unsatisfactory. The obstruction in the nose had been felt for an indefinite period beforehand, and with so little uneasiness or pain was it accompanied, that I really believe, were it not for the deformity, no application would have been made for relief. It had been considered in the neighbourhood of the character of polypus. Its termination I am not aware of, I am only satisfied of its nature. The account which the lady, who was the subject of the second case, gave of herself, was as follows: when travelling in England, about a month before, without any previous uneasiness in the nose, she suddenly perceived a most disagreeable noisome smell, which, at the moment, she was inclined to attribute to some accidental cause in her apartment, at the hotel at which she stopped. She could not however get rid of the sensation, and although it varied in its pungency, it was more or less constant. Under those circumstances she applied to me. In the examination of the nares, I could only observe the tumour I mention in connexion with the septum. It had a fistulous open-

ing, through which oozed out a thin fluid, having the foetid odour complained of. Some time elapsed before it subsided. It ultimately, however, did subside, and was most benefited by the occasional injection of a strong solution of the nitrate of silver, and the administration of mild alteratives.

The apprehension that I have already taken up too much of the time of the society, and encroached on that usually allotted to each paper, prevents my entering into the details of any more cases. Indeed there is great similarity between those to be comprehended under each class of tumours.

Our prognosis in abscesses of the septum, whether symptomatic or idiopathic, must be very guarded. The great danger to be apprehended is disease of the bones or cartilage, or both, and this may occur at a period very remote from the apparent cure of the abscess. We may, however, have more favourable expectations, where the case is acute and early attended to, than where the reverse occurs: an early opening appears to me to constitute one of the first steps to improvement, and in the progress of each case, a variety of local and constitutional remedies will suggest themselves, which it would be superfluous on my part to particularize. I fear that in the majority of cases, whether symptomatic or idiopathic, we must expect destruction, to a greater or less extent, of the cartilaginous septum. This may be effected by absorption, without ulceration of the mucous membrane, in which case the mucous membrane of one nostril adheres to that of the other, or ulceration may arise, and then an opening of variable extent admits of a communication between them. Although I have seen many such results without subsequent deformity, yet we are not to lose sight of its possible occurrence, and should by every means in our power endeavour to limit the extension of the disease.

I will now conclude with those diagnostics, which will enable us to distinguish each class of tumors, as well from one another as from any other of the diseases which may occur in the neighbourhood.

The immediate connexion with recent injury, its rapid for-

mation, its peculiar colour and feel, and its direct union with the septum by a broad base, are strong characteristics of the *bloody* tumour.

The presence of a wound or other contusion of the integuments covering the nose, their swollen and inflammatory condition, the distress in the nares, and the formation of the tumors within a specific time, accompanied with more or less acute symptoms and general febrile excitement ; their peculiarly red and smooth appearance, with distinct sense of fluctuation ; their perfect freedom of connexion on their outer side, and marked extensive base in contact with the septum, all serve equally to characterise the *symptomatic* or *acute* abscess.

The *chronic* again has some peculiarities in contradistinction to the acute, and there is no possibility of its being confounded with the *bloody* tumor. The absence of injury and all other marks of inflammation are to be borne in recollection, and the little uneasiness also felt in its formation is not to be lost sight of. In other respects some analogy exists between them.

The natural malformations and varieties in the direction and form of the septum being considered, the diseases which it appears to me at all probable, that those affections now described might be confounded with, are a thickened or elongated condition of the mucous membrane, covering the septum and polypus. I really think it only necessary to allude to them. When the mucous membrane is affected as I have mentioned, it is enlarged more in the shape of a fold than a distinct swelling, and there is no sense of fluctuation. The history of the case will assist in forming the diagnosis. In polypus also, no matter of what nature, we have, in an accurate knowledge of its characters and connexions particularly, sufficiently strong distinguishing marks, to render a mistake on the part of the surgeon inexcusable. Indeed we might hazard an opinion, founded on the connexion of those tumours with the septum, as I believe it will be admitted, that polypus seldom or ever arises from this portion of the Schneiderian membrane.

(*To be continued.*)

ART. III. *Researches on the Diagnosis of Pericarditis.* By WILLIAM STOKES, M.D., one of the Physicians of the Meath Hospital and County of Dublin Infirmary, &c. &c.

IN the 7th number of this Journal, (March, 1833), I announced, that in several cases I had been enabled to verify the diagnosis of Collin, relative to the sound of friction, produced by the rubbing together of the surfaces of the pericardium when they are covered with lymph, which sound he compared to that of the creaking of new leather. I also stated, that the character of this sound varied in a remarkable manner, not only in different cases, but also in different stages of the same case ; that in some cases, it closely resembled the bruit de soufflet, produced by valvular disease ; that there was the most complete analogy between it and the frottement of Laennec, as arising from inflammation of the pleura ; and that the observation of this phenomenon would be found an important addition to the direct signs of pericarditis.

Since that period, I have been so fortunate as to meet with several cases of pericarditis, all of which I have studied with the greatest care, both as to their symptoms and stethoscopic phenomena ; and I can now announce, that in many cases of this disease, the diagnosis can be drawn from direct signs with extreme accuracy ; so that it can no longer be stated, to rest chiefly on negative evidence.

I shall now submit the accounts of several cases of this disease.

CASE 1.—*Violent symptoms of an inflammatory affection of the chest ; sound of friction over the heart ; healthy state of the lungs ; pericarditis.*

A young man named Keas, aged 20, was admitted into the Meath Hospital about the middle of January, 1830, labouring under symptoms of gastric fever, and complaining of severe pain in the inferior sternal region, which symptom subsided in the

course of a fortnight, under antiphlogistic treatment. He was again admitted on the 18th of February, in a state of great distress from constant short cough, hurried and difficult breathing; he had inflammatory fever, a rapid, small, and weak pulse, and great tenderness of the integuments of the chest. These symptoms had been of four days' standing. The anterior portion of the right side presented a considerable degree of dullness on percussion, but with the exception of this sign, there was no other physical indication of thoracic disease. He complained of some pain in the lower portion of the chest. On the next day he complained of acute pain under the false ribs of the right side, where he said all his pain was fixed; his pulse was very rapid, and irregular in fulness and frequency; respirations 48. On the following day respiration was found to be completely thoracic, yet even at this period no stethoscopic sign of pulmonary disease could be detected, sufficient at all to account for his symptoms.

The patient was somewhat relieved on the morning of the 20th, but in the afternoon was seized with a violent stitch under the left mamma, which continued till the middle of the night. On the following morning, the pulse was extremely intermitting and irregular; the heart's action was strong, accompanied with a peculiar rustling sound, conveying the idea of two exceedingly rough surfaces rubbing one upon the other, and accompanied by a feeling of friction, when the hand was applied over the region of the heart. The patient sunk in the course of the night, no treatment appearing to have had any effect in removing, or even indeed alleviating the severity of his symptoms.

Dissection.—Body somewhat emaciated; the heart was found greatly enlarged, extending to the right side, and extensively displacing the lung. The internal surface of the pericardium was found, as it were, completely mammilated by depositions of semi-cartilaginous lymph; and near the apex of the heart, a strong cartilaginous band, nearly an inch in width, was found connecting the heart to the external fold of the pericardium.

Besides these appearances, which were evidently the result of chronic disease, a recent effusion of lymph, of the colour of blood, was found, forming a feeble and soft medium of union between the heart and pericardium. Valves healthy; some cadaveric engorgement of the lungs, which were in other respects free from disease.

In this case, the nature of the disease was not suspected, until within a very short time previous to its fatal termination. As the patient was of a strumous habit, my first idea was, that it was a case of acute phthisis, an opinion which I afterwards forsook, from the absence of the stethoscopic signs of pulmonary irritation, which so constantly accompany this affection: in fact the stethoscope detected nothing but intense puerility of respiration, with some slight bronchial rales. It was but a very short time before death that the pulse became intermitting, and at this time the phenomena of the heart, as noticed in the case, were detected, but I am not at all prepared to say that they might not have existed before, as one of the most curious circumstances connected with these phenomena, *is the very slight distance beyond the actual situation of the heart, to which they are perceptible.* The dulness of sound of the right anterior portion of the chest, was evidently caused by the great enlargement of the ventricle and auricle, and was an additional circumstance tending to mislead in the diagnosis of tubercle.

CASE 2.—Extensive Empyema of the left pleura; displacement of the heart, to the right mammary region; acute latent pericarditis; nearly complete obliteration of the pericardial cavity before death; intense sound of friction, disappearing in the progress of the obliteration.

A man named Lennon, æt. 28, was brought to the hospital early last January labouring under the most aggravated dyspnoea. On examination, I detected an extensive empyema of the left side, and the heart was observed to pulsate to the right of the sternum, but presented no morbid sound whatsoever. His symptoms had been at least of four months' standing, and he

stated that he had observed the displacement of the heart, a month previous to his admission.

On the following day his breathing was much relieved, and he was placed in the medical wards under the care of Dr. Graves. He was treated by local bleeding and counter-irritation; towards the end of the month he suffered much from the super-vention of bronchitis, which was greatly relieved by extensive dry cupping, and the use of the tartar emetic solution. By the end of the month it was found that the dilatation of the side was decidedly less.

On the first of February the patient came under my care, the displacement of the heart continuing, *but without the occurrence of any morbid sound in its pulsations.* The patient was treated by mild mercurials and narcotics. In the course of the week he began to suffer extremely from flatulent distention of the belly. On the 10th, I made a careful examination of the whole chest: no change whatever was observed in the stethoscopic phenomena or impulse of the heart, but on the 12th, having placed my hand accidentally over the displaced heart, I was astonished at feeling a most distinct fremitus over its entire region, giving to the hand a sensation of two very rough surfaces rubbing violently one upon the other. On applying the stethoscope, we found that the sound varied over different portions of the heart. At the base the sound was similar to the frottement in ordinary cases of dry pleurisy, but towards the apex it closely resembled the bruit de rape of Laennec, its point of greatest intensity being between the upper border of the third, and lower of the fourth rib. We observed also, that if the stethoscope was moved to a distance of not more than an inch and a half from the situation of the heart, these remarkable phenomena ceased, though the contractions of the heart were heard distinctly. Pulse about 130, small, but not at all irregular; the sound of friction accompanied both sounds of the heart; dyspnoea very urgent, but the patient made no complaint whatever as connected with the heart. The region of the heart was freely leeches, and the patient ordered digitalis.

13th. The freuissement is remarkably diminished, the sound is generally quite analogous to the double bruit de rape; heart's impulse less; no increase of dulness on percussion. From this period till the 17th, the sensation and sound of rubbing gradually disappeared; it was only by close questioning that the patient admitted he had some pain at the right of the sternum.

On the 18th all freuissement and rasping sound had disappeared, except in a spot which could be covered by the stethoscope, over the base of the heart and to the right side: in this situation a sound between a frottement and a bruit de rape was distinctly audible. The patient sunk on the 22nd.

Dissection. The left pleura presented the usual appearances which occur in extensive and chronic empyema, its cavity containing nearly a gallon of sero-purulent fluid. The right pleura contained about a pint of perfectly clear serous fluid, and presented no effusion whatever of lymph on its surface. The pericardium appeared increased in size; it had lost its semi-transparency, and could not be made to glide over the heart. On opening its cavity, we found, with the exception of a small space at the base of the heart, exactly corresponding to the situation where the frottement was last heard, that it was completely obliterated by recently effused lymph, which was reddish, and though soft, presented a considerable degree of consistence, so that when the two folds were separated by traction, a vast number of layers, perpendicular to the surface of the heart, made their appearance. On the anterior portion of the ventricles, towards the apex, the union of the two surfaces was complete. Here the quantity of effused lymph was evidently much less than in the other parts of the cavity. Around the origins of the great vessels, particularly towards the right side, no union had taken place between the surfaces of the pericardium; each face, however, was covered by lymph presenting a considerable consistence, and giving the appearance which is produced when two

smooth surfaces, covered with a tenacious matter, are suddenly separated.

This case I look on as one of extreme importance, as it was the first in which the positive diagnosis of an effusion of lymph on the surface of the pericardium was verified by dissection ; and it must be recollected, that the heart was extensively displaced by an empyema, and that the patient scarcely, if at all, referred any uneasy sensation to the situation of the recently suffering organ. The diagnosis was founded on the following circumstances : first, the sudden appearance of the phenomenon of fremitus, and the sound similar to the bruit de rape, in a case which had been long under accurate observation, and which presented no such signs two days before their first appearance ; secondly, the similarity of these phenomena with those in the case of Keas.

But in the progress of the case we added to our diagnosis, and I recorded it as my opinion, that adhesion of the surfaces had taken place, except over the base of the heart. This diagnosis was arrived at from observing the rapid subsidence of the phenomena under treatment, except in the above situation ; *the region of the heart still continuing clear on percussion*, a proof that the disappearance of the signs was not owing to a liquid effusion ; which opinion was still farther rendered probable, by the impulse of the heart continuing to be felt with the utmost distinctness. The influence which local treatment exerts in modifying these phenomena is most singular, as we shall find from the consideration of the ensuing cases.

CASE 3.—*Acute Pleuritis, with copious effusion on the right side ; displacement of the liver ; remarkable alteration of this organ from the effects of pressure ; Pericarditis.*

Patrick Murphy, ætat. 40, was admitted into the Meath Hospital on the 22nd of March, 1833. A fortnight previously this patient got a slight cough, which he neglected ; he was exposed to wet and cold, and on the 15th, (seven days before admission,) was attacked by a rigor, followed by acute pain in the right side. On the two following days he continued

slightly unwell, but was able to attend to his business ; but on the 18th, the rigors returned, and the pain in his side became so severe, that he was obliged to confine himself to bed ; since that time up to the period of his admission his sufferings continued to increase. On admission he complained of a severe stitch in the right side, aggravated by coughing and inspiration ; his expectoration was scanty, and consisted of mucus and serum ; respirations 54 in a minute ; pulse 106, small and hard ; tongue very foul, with redness at the edges and tip ; thirst, and epigastric tenderness.

On percussion we found that the right side, both anteriorly and posteriorly, sounded dull, particularly in its more inferior portions, where the integuments were exquisitely tender. This side was also found an inch larger, by measurement, than the other, and no vibration was communicated to the hand when the patient spoke, though this was distinctly felt in other parts of the chest.* Respiration over the superior portions of the chest was heard feebly, and we observed a doubtful egophony under the scapula. The liver was observed to extend about an inch below the ribs, forming a tumour exquisitely tender on pressure ; decubitus on the affected side.

Active treatment was adopted, the patient was bled generally and locally, and calomel and opium were exhibited in free doses, but no effect appeared to be produced on the disease, as on the 24th the dulness was found to be extended, the side still more dilated, and the intercostal spaces elevated. On the 29th we found that both sides corresponded in measurement, yet there was no appreciable improvement in the other symptoms ; no satisfactory mercurial action had been induced, although the patient had been in the daily use of mercury. On the following day it was observed, that the dulness extended quite across the sternum, and the respiration in the superior portion of the lung

* See my *Researches on the Diagnosis of Empyema*, Vol. III. No. 7. of *Dublin Journal of Medical and Chemical Science*.

had assumed a bronchial character. On this day also we observed, for the first time, a well-defined sulcus existing between the false ribs and the superior portion of the hepatic tumour. On the 31st it was found that the patient had passed a very bad night, with dyspnœa and orthopnœa, and at the hour of visit he could scarcely breathe in the recumbent posture. The hepatic sulcus was more defined, and the liver evidently pushed to the left side; respirations 40; pulse 92, small, feeble, but perfectly regular. On examination with the stethoscope, Mr. Roe, one of the pupils of the Hospital, discovered that the pulsations of the heart were accompanied by a loud sound of friction, which extended over the whole region of the heart, and at the apex closely resembled a loud bruit de rape, accompanying both sounds of the heart. The similarity of these phenomena with those observed in a former case led him to make the diagnosis of dry pericarditis.

On examination, I found that the region of the heart sounded clear on percussion; its impulse could be distinctly felt; and evident fremitus was communicated to the hand, when placed over the cardiac region. The action of the heart, though rapid, was perfectly regular, and a morbid sound between that of the craquement de cuir neuf and bruit de rape was distinctly audible. The patient declared he had no pain whatever in the region of the heart, but stated, that during the two last days he had felt some slight uneasiness in that situation. On the next day the patient was obviously sinking, there was some delirium, and the pulse for the first time became intermittent. We observed that the hepatic sulcus, which, for the last two days, had been so well marked, was now nearly imperceptible; the sound of friction continued the same as on the day before. The patient died shortly after the hour of visit.

Dissection.—On opening the abdomen the thin edge of the right lobe of the liver was found to extend as low as the umbi-

licus, the left to be extended into the corresponding hypochondrium, and the horizontal fissure was nearly in the direction of the median line, though inclined slightly across it. The hepatic tissue was soft and of a red colour, and we observed that the sulcus between the under surface of the diaphragm and the upper portion of the liver was very inconsiderable.

On removing the liver, its diaphragmatic surface was found to present a singular appearance. It had yielded to the pressure of the convex diaphragm, so as to present a concavity of great size, into which the right portion of the diaphragm accurately fitted.* When the viscera were removed from the abdominal cavity, this portion of the muscle, distended and rendered convex by the thoracic effusion, presented a most striking contrast with the left, which was in its natural situation and form. Some adhesions existed between the upper portion of the liver and the diaphragm.

The right pleura contained upwards of nine pints of an opaque, whey-coloured fluid, and was universally lined by a thick layer of flocculent lymph. The lung compressed, and presenting wrinkled folds, lay against the mediastinum; its lower lobe somewhat projecting, and separated from the diaphragm by a large space. In its antero-superior portion, was a cavity of the size of a walnut, filled with thick, brownish yellow pus; this was covered externally by the pleura. On opening the pericardium we found its surface universally covered with lymph of a reddish colour, and formed into small, irregular masses or granules; but there was no adhesion. The whole surface was thus rendered exceedingly rough, particularly towards the apex, the situation in which, during life, the frottement had been heard loudest, and most resembling the bruit de rape.

* We may get an accurate idea of this by placing one hand under the other, which is flexed. The convex surface of one hand represents the diaphragm, the concave of the other the liver.

The lower portion of the ileum was in a state of great vascularity, and its mucous coat softened.

In the second case of this disease which I have recorded, we had an example of latent dry pericarditis, supervening upon an old empyema of the left side, which had produced great displacement of the heart. In the present instance, however, we see the same disease following a recent pleuritic effusion of the right side, with extensive displacement of the liver. In both cases, the disease was recognized, and the diagnosis verified by dissection, although none of the usual symptoms of pericarditis were present, and although the patients never complained of any uneasy sensations referred to the heart. In both, too, the diagnosis was founded on this principle, *the appearance of the phenomena of fremitus or rustling, as felt by the hand, with the stethoscopic signs as described ; in a case in which, a very short time before, no such phenomena existed.*

In these two cases, although the pulse was regular, the action of the heart not altered in any new manner ; pain absent, and the sound on percussion clear, yet a universal pericarditis was detected. I need scarcely remark, that in this case our diagnosis was much strengthened by the observations on the former one. In one respect, our diagnosis of the two cases differed : in the former, the gradual cessation of the phenomena, except over the base of the heart, while the region of this organ continued clear on percussion, led us to conclude, that a process of obliteration had taken place extensively ; while in that before us, the persistence of the phenomena, both as to extent and intensity, allowed us to declare, that no obliteration of any part of the cavity of the pericardium had taken place. The examination of the cases will shew the beautiful verification of either diagnosis.

This case has also a further source of interest to me, from its affording a verification of many of those diagnostics of empyema which I have already pointed out in my communication on that subject.* I would particularly allude to the existence

of the sulcus under the false ribs. This case has confirmed my former observations, and thrown new light on the subject. In the former case, the disappearance of the sulcus was owing to the return of the liver to its natural situation, from the absorption of the intra-thoracic effusion, as shewn by the returning clearness of the chest, and the sound of respiration ; both of which coincided with the convalescence of the patient : in the latter, however, the disappearance of the sulcus was owing to a very different cause. The effusion into the pleura continuing undiminished, displaced the liver, and for two days the sulcus was distinct ; but then almost completely disappeared, leaving me at a loss even to conjecture on its cause. Dissection shewed that its subsidence was caused by an alteration of the shape of the liver, which, softened, and yielding to pressure, lost that convexity which I have elsewhere demonstrated to be necessary for the existence of the sulcus. I have no doubt, also, that this result was brought about, in a great degree, by the orthopnœa from which the patient suffered during the last days of his existence ; as in the erect position, the liver is forced upwards by the action of the abdominal muscles. Of this any one can satisfy himself, by measurement and percussion of the lower portion of the right side, in the sitting and recumbent position.

We see here a modification in the shape of the liver, produced by an anormal condition of neighbouring organs, analogous to the various depressions and sulci which naturally exist in it, for the reception of portions of other viscera, such as the stomach, gall bladder, duodenum, and kidney. Similar depressions are also observed from the result of other diseases exterior to the liver, such as hydatids, external abscess, the colloïd matter, &c. &c.

* See Contributions to Thoracic Pathology.—Researches on the diagnosis of empyema, Dublin Journal of Med. and Chem. Science, Vol. III. No. 7.

CASE 4.—*Acute dry Pericarditis superrening after the suppression of a cutaneous eruption.*

Laurence Toole, ætat. 5 years, was admitted on the 5th of April, 1833, labouring under inflammatory fever, with constant thirst, and desire for cold drinks, occasional vomiting, a short cough, hurried breathing, and orthopnœa; when asked where he felt pain, he always pointed to the abdomen, which was full and tender, particularly in the left hypochondrium.

A fortnight previous to his admission, he was affected with a cutaneous eruption, the nature of which we could not ascertain. This was rapidly removed by the use of some ointment, but in a few days after its subsidence he became heavy and uneasy, and the above symptoms soon shewed themselves. When I saw him first, he was sitting up in bed, with his legs drawn up, his respiration laborious, high, and hurried, 32 in the minute; the countenance depressed; the lips livid; some œdema of the face, and distention of the jugulars; pulse 130, small, jerking, but regular; the heart's impulse was excessively violent, and when the hand was placed over the cardiac region a most distinct fremitus was perceptible, giving the idea of two very rough surfaces rubbing violently one upon the other.

On applying the stethoscope, a very loud frottement was heard over the heart, accompanying both sounds; this was also heard to the right of the sternum, under the clavicles, and along the spine, but in the two latter situations it lost much of its roughness, and approached closely to the bruit de soufflet. The sound on percussion over the region of the heart, was dull to an unusual extent; the respiratory murmur was every where puerile and pure, with the exception of a slight bronchial râle here and there. On the next day, the hands, face, and neck, were œdematous; the dulness over the heart had increased in extent; the jugulars were pulsating; respiration thoracic; the stethoscopic phenomena of the heart continued the same. He died on the following day: the tenderness of the abdomen having become exquisite, and the rubbing sounds of the heart

having got the creaking character described by Collin.

Dissection.—The heart was found generally hypertrophied, and the pericardium thickly covered on both surfaces by a reticulated layer of lymph, of a reddish colour. No adhesion appeared to have taken place in any situation, and there was no fluid in the sac; the left auriculo-ventricular and aortic valves were slightly thickened and somewhat opaque, but they were in no degree shortened. Circumstances did not permit an examination of the rest of the viscera.

In the diagnosis of pericarditis in this case, we had to encounter a difficulty, which did not arise in those before recorded. In the former cases, the disease, as it were, commenced under our eye, so that the sudden occurrence of new and striking phenomena rendered the diagnosis comparatively easy. In this case, on the contrary, the patient was brought in, labouring under the already formed disease; so that the question arose, as to whether the phenomena were produced by a recent pericarditis, or proceeding from a former and chronic disease of the heart, such as an extensively diseased condition of the valves: added to this, it is to be remarked, that we could not get any satisfactory account of the child's previous state from the parents. Two circumstances also were highly calculated to lead to doubt; one, the extent of dulness over the region of the heart; and the other, the great extent to which the stethoscopic phenomena were audible, both differing from our former cases, and leading strongly to the opinion of the existence of extensive chronic disease.

Notwithstanding these difficulties, however, I made, on the second day that the patient was in hospital, the positive diagnosis of dry pericarditis; and the treatment was directed to the removal of inflammation, both in the heart and in the abdominal cavity. The dulness of the region of the heart was satisfactorily accounted for by the great hypertrophy of that organ; a cir-

cumstance, which, taken in connexion with the excitement of the heart, and the age of the patient, may explain the unusual extent to which the stethoscopic phenomena of pericarditis were audible.

CASE 5.—*Acute Pericarditis, with Peripneumony and Arthritis.*

Patrick Traynor, ætat. 35, was admitted into hospital on the 16th of April, 1833. It appeared, that nine days previous to his admission, this patient was attacked with pain and oppression at the præcordia, with severe dyspnœa and cough, which greatly aggravated the pain. On the next day, he was seized with pain and swelling in the articulations of the lower extremities, and soon after the left arm became affected. On admission, he was greatly sunk, and appeared moribund; the countenance was expressive of great anxiety; he had laborious respiration, with frequent cough, and muco-purulent expectoration, which the night before had been tinged with blood. He was unable to stir from severe pain in the knees, and had also a dull pain at the bottom of the sternum, increased by coughing, and by pressure on the epigastrium. Pulse 96, very feeble and small, but regular. On percussion, the chest sounded well anteriorly, no dulness more than natural being observable over the heart; posteriorly there was some dulness over the inferior portion of the right side; here, and over the inferior portion of the left, an intense crepitating râle existed.

The sounds of the heart were peculiar, and varied remarkably with the position of the stethoscope; when applied over the left side of the heart, the pulsations were found to be accompanied by a sound resembling an indistinct bruit de rape; but along the lower part of the sternum, there was an exceedingly loud and perfect frottement, which accompanied both sounds of the heart. Towards evening, the patient, after having taken some stimulants, was found in a state of general reaction. On the following day the pulse was 88 in the minute, perfectly re-

gular, and somewhat contracted ; he said he had no pain in the lower part of the sternum, except when he coughed ; the impulse of the heart was not at all excited ; and the lower part of the sternum continued clear on percussion.

The frottement and simulated bruit de râpe, continued as yesterday ; but a new and remarkable phenomenon was observable : every four or five beats, a change of character occurred with great regularity, constituting a most perfect rhythm. This was found to be connected with the respiratory movements, the sound being roughest and most intense during inspiration, but during expiration becoming feebler, and more like the bruit de soufflet. On the following day, the 18th, we found that the phenomena of the heart were distinctly modified, as compared with the day before ; the rasping sound being now distinct at the left side of the heart, and wanting at the right, where a double bruit de soufflet was audible ; the distinctness of which was, as before, modified by the action of respiration.

On the 21st, we could still feel a slight fremissement over the heart, the rasping character of the friction sound had disappeared, and the region of the heart sounded clear. The next day, the harsh rubbing sound had completely disappeared, the sound being that of a pure double bruit de soufflet. At this time, the patient's general state was greatly improved ; in a few days, however, the pulmonary symptoms reappeared, with an increase of the phenomena of the pericarditis ; some time after this he sunk. We were not able to obtain a dissection.

The treatment consisted of local bleeding, counter-irritation, and the use of colchicum and mercury.

In this case, although we cannot appeal to the results of dissection, yet I would submit, that there can be but little question as to the nature of the disease, and the physical alterations of the pericardium. This was obviously a case of dry pericarditis : the patient, as in several of the former instances, laboured under a complication of disease : the right lung being severely

affected, and the articulations the seat of an obstinate inflammation. We may hereafter inquire how far this circumstance of complication may serve to explain the occurrence of that variety of pericarditis in which lymph alone is effused. It is at all events a remarkable fact, that in almost all the cases of this disease, that I have witnessed, and the cases have been very numerous, the patients laboured under inflammations in various organs and tissues of the body.

This patient presented stethoscopic phenomena, perfectly analogous to those observed in the former cases, where we had an opportunity of verifying our diagnosis by dissection. The sound on percussion over the heart continued clear, and the impulse of that organ was always distinctly perceptible, and accompanied by a rubbing feel; all circumstances, tending to show the non-existence of liquid in the cavity of the pericardium. During the progress of the disease too, we observed those remarkable changes in the character of the sounds, which I have noted in the preceding cases: the passage of the rough rasping sound, to one giving the idea of a smoother surface; the first similar to the bruit de rape, the second to the bruit de soufflet. But in this case, two other circumstances of importance are to be noted.

First, the change of situation of the rasping sound. It will be recollected, that at first this was most distinct at the right side of the heart, but that shortly after, it became evident at the left, where, previously, a sound similar to a double bruit de soufflet, was only audible: this I look upon as a circumstance of great importance in the diagnosis between this disease and affections of the valves. It may happen, as I have often myself observed, that in cases of extensive valvular disease, a bruit de rape may pass into a bruit de soufflet, in consequence of the moderated action of the heart, the result of rest, or treatment. On excitement taking place, however, the original sound will be restored. But here we have a change, first in character, and secondly in the

actual situation of the sound, a circumstance easily explicable by the extension of the disease and the modifications produced on different portions of the pericardium. The slight extent to which these sounds are audible, unless during great excitement, gives additional weight to this explanation. I do not know of any case of valvular disease, in which the sound of bruit de rape in the course of twenty-four hours, was found to change from the right to the left side of the heart.

Secondly, the modification produced in the sounds of friction by the action of respiration. It will be recollected, that the rubbing sounds became more distinct, and conveyed the idea of a rougher surface during inspiration; during expiration they became less distinct, and closely approached to the bruit de soufflet. We found, further, that if the patient held his breath, the character of the sound was between these two extremes, and that the peculiar rhythm ceased, evidently shewing, that it was produced in some way by the action of respiration.

I am not yet prepared to offer a satisfactory explanation of this very interesting phenomenon, but may remark, that no matter how we explain it, it promises to be an additional source of diagnosis between the phenomena of dry pericarditis and valvular disease. In the latter affection I have never observed any thing like a rhythm produced by the respiratory movements.

It appears to me, that in determining the exact nature and cause of this curious modification of sounds, we must take several circumstances into consideration. The descending motion of the heart during the contraction of the diaphragm, would bring different portions of the surface of the pericardium into opposition, and thus cause a change in sounds. Again, the existence of unorganized lymph on the lower portion of the left pleura, at the same time that the pericardium was in a similar state, would give an additional source of frottement, so that we would have a sound of friction in the one case from the peri-

cardium, and in the other from the pleura. Now when we recollect the relative frequency of the motions of the lung and heart, we can understand the production of a rhythm in the sounds.

Lastly, there is a source of a rubbing sound which is not generally known. When the antero-inferior and lateral portions of the left pleura are covered with recent unorganized lymph, the mechanical action of the heart will produce a frottement, evidently the result of its pulsations on the mediastinum and corresponding portion of the pleura. This I have constantly observed, the sound is synchronous with the heart, and is not interrupted by the stoppage of respiration; it is heard not over the region of the heart, but a little beyond the situation of the pericardium, and I have the notes of one case in which it occurred, where the lower portion of the pleura was covered with recently effused lymph, and the pericardium perfectly healthy.

CASE 6.—*Acute Arthritis; Pericarditis; double Pleuro-pneumonia; recovery.*

Frances Kelly, ætat. 24, of a vigorous constitution, was attacked on the 25th of March, 1833, with symptoms of severe arthritis, affecting most of the articulations. She had considerable inflammatory fever, but no pain whatever in the chest. Previous to this illness she had enjoyed the best health. In the course of six days, she was admitted into the Meath Hospital, where I found her labouring under a very general arthritis, although none of the joints were in a state of excessive inflammation. She had high fever, and a full strong pulse, perfectly regular, no pain of the chest, cough or dyspnœa. The heart's action was strong, *and a slight frottement was audible near to the apex.*

Free bleedings, both general and local, were ordered. The tartar emetic treatment was pursued for nearly five days, when we had to desist from the occurrence of vomiting and purging.

On the seventh day after her admission, I found her in a

state of high fever, and complaining of severe pains in the joints, which, however, did not shew any corresponding increase of inflammation. The pulse full and hard, 130 in the minute ; respiration 40. The increase of fever, without increase of arthritis, led me to suspect some severe visceral inflammation, and I directed my attention to the heart, but could not discover any unequivocal sign of disease.

Next day, however, there was decided evidence of the existence of inflammation, both in the pericardium and left lung. The left side of the chest in its lateral and inferior portions sounded dull, and the respiratory murmur had become feeble generally. In addition to this, a decided pleuritic frottement could be heard in the antero-inferior portion. That it proceeded from pleuritis was obvious from this, that it was synchronous with respiration, and whenever the patient held her breath the sound altogether ceased.

The sounds of the heart were accompanied by a loud rasping, occurring with both sounds. This was very loud at the base of the heart, and scarcely audible at the apex. Under the clavicle, and in the posterior portions of the chest, the sound was inaudible, although the pulsations of the heart were distinctly heard. No evident fremitus perceptible by the hand. Her countenance was extremely anxious ; she declared that she had no pain in the chest, but had a sensation of sinking about the heart, with distressing palpitation ; great prostration, but no syncope ; she was apprehensive of speedy death ; respiration hurried, but not difficult ; pulse 124, hard and thrilling, but regular. She had slept badly, and begged for a narcotic. Leeches, calomel, and digitalis.

On the next day, 9th, although there was an evident improvement in the general symptoms, the rasping sound had extended over the whole region of the heart. The following is the report of the 10th :—

The anxiety and sense of sinking are much diminished ; breathing easier ; pulse 110, soft and full ; impulse of the

heart less; urine scanty, and high coloured; no mercurial action. The frottement continues distinct over the whole region of the heart, but has lost much of the roughness, and passes into bruit de soufflet; the left side still sounds dull. No examination was made of the posterior portions of the chest.

11th. The rasping sound was found to have ceased at the apex, but it still continues at the base of the heart, with evident fremissement. Under both scapulæ, a distinct pulmonary frottement was audible, and the right side had become dull on percussion. Blister, mercurial frictions.

12th. General improvement; the rasping frottement of the heart had nearly disappeared, being only heard slightly, at the sternal end of the third rib. No change in the pulmonary signs.

13th. All frottement had disappeared from the heart, but from our unwillingness to disturb the patient, no examination was made of the posterior portions of the chest. No ptyalism had been produced.

14th. The patient was not so well. The disease in the lungs shewed but little disposition to resolve, and the rasping sound re-appeared in a point which would be exactly covered with the stethoscope, over the right side of the base of the heart. It was heard no where else: there were neither rasping nor the simulated bruit de soufflet over any other portion of the heart. I now determined to leech the right side freely, and to again try the tartar emetic treatment,* particularly as throughout the case the appetite had continued good, and the tongue generally clean. She used the remedy for six days, at the rate of six grains each day, with gradual improvement in the pulmonary symptoms. The region of the heart, however, became extensively dull, the rasping sound continuing at its

* We have seen several cases of pneumonia in the Meath Hospital, in which, after the failure of mercury, no ptyalism having been produced, the use of the tartar emetic was followed by a rapid resolution of the disease.

base. The dulness gradually subsided, and on the 22d of April the sound over the heart was perfectly natural, and the pulmonary congestion nearly removed. The following is the report of the 24th.

“ The phenomena of the heart are now perfectly natural. There is still some dulness over the posterior and lateral portions of the right side, with some frottement.”

In a few days this patient was quite convalescent, and the most minute examination of the heart could detect no departure from the state of health.*

This interesting case presents many of the peculiar phenomena of pericarditis with effusion of lymph, that were observed in the former instances. The double rasping sound, at first partial, yet rapidly spreading over the whole region of the heart; the feeling of fremitus given to the hand; the slight

* From some time previous to, and after the time that this girl was admitted, we had a most remarkable number of cases of acute arthritis. It was not uncommon to have four or five of such cases in a single ward. How far this kind of epidemic tendency to affections of the fibrous and synovial tissues, may explain the frequency of pericarditis which has been lately observed, I shall not now inquire. These instances of arthritis, were almost all of an highly inflammatory character, and were greatly benefited by general bleeding, repeated applications of leeches to the affected joints, the use of antimony, nitre whey, and opiates. In some cases colchicum was given. In the advanced stages of the disease, we found great benefit from the use of sulphate of quinine, and the employment of the croton oil frictions to the joints. This last remedy was employed in a very great number of cases, and generally with good results. In some instances indeed the relief of pain, and the restoration of the power of motion to the joint, were singularly rapid. It did not appear, however, to have much effect in removing the tumefaction. Our method was to apply about six drops of the oil upon the affected joint, which were then rubbed in with a piece of lint; next day an eruption of numerous papulae appeared, with great relief of the pain and stiffness. If the rubbing was continued, the eruption assumed very much the appearance of a close crop of the modified small pox. In many instances we used it successively to several of the joints, and in no case was the relief thus produced, followed by any metastasis to the viscera.

extent to which the sounds were audible ; the cessation of the rasping frottement at the base of the heart. In all these characters, a great resemblance will be found between this case and those which have preceded it. But in one important respect this case differs from those alluded to. It will be recollected, that shortly after the first commencement of the disappearance of the rubbing sounds of the heart, the region of this organ became extremely dull on percussion, a circumstance which did not occur in any of the others. This, in all probability, was produced by an effusion of fluid, which also might explain the cessation of the rasping sound to a great degree : and it must be recollected, that at this period, the rasp continued at the base of the heart, or in other words, in the situation of all others where the two surfaces of the pericardium would be, most likely, still in contact. In another case, which also occurred in the Meath Hospital, *we could distinctly trace the subsidence of the rasping sound, with the gradual extension of dulness, and its return with the return of clearness.*

Although I possess the notes of several other cases, in which the peculiarities alluded to in the preceding instances were observed, yet I shall not give them at present, but content myself with using such facts as they afforded, in the following observations.

As Collin was the author who first announced, that in cases of pericarditis, he was enabled to make the diagnosis of incipient pericarditis, by observing the phenomena of friction ; and as his statements have not been generally admitted, I shall quote from his work* the observation alluded to.

“ Le bruit analogue au craquement du cuir neuf s’est offert une fois seulement à notre observation : c’était sur un homme qui succumba à une péricardite chronique. Ce bruit persista

* Les Diverses Methodes d’Exploration de la Poitrine, &c. par V. Collin. Paris, 1824.

pendant les six premiers jours de la maladie, et disparut dès que les symptômes locaux annoncèrent un épanchement liquide un peu abondant dans le péricarde. M. Devilliers, élève interné à l'hôpital Saint-Antoine l'observait dans le même temps sur un homme chez lequel les autres symptômes faisaient croire aussi à l'existence d'une péricardite. Il ignorait alors que ce phénomène se fût déjà présenté dans cette affection, et n'avait pas fondé là-dessus son diagnostic. Le malade sortit après un séjour assez prolongé. Il le présentait encore, et n'avait éprouvé aucun soulagement du traitement qu'on lui avait administré. Il est à regretter si ce malade a succombé qu'on n'ait pas pu vérifier le diagnostic par l'autopsie. Une seconde fois M. Devilliers eut occasion de faire l'examen du cadavre d'un homme qui avait présenté ce bruit pendant toute la durée de son séjour dans l'hôpital. Il trouva une péricardite chronique qui avait déterminé la formation de fausses membranes épaisses et de végétations nombreuses sur le péricarde et le cœur. Il n'existait, entre la surface de cet organe et son enveloppe, qu'un petit nombre d'adhérences, et le sac formé par le péricarde ne contenait pas un goutte de sérosité. Peut-être ce bruit serait-il une symptôme constant de la péricardite avant l'existence d'un épanchement dans l'enveloppe séreuse du cœur, symptôme très fugace, dans les cas où la maladie se termine en peu de jours, d'une durée plus longue quand elle est chronique."—p. 64. Again at page 116, he makes the following remark, "j'expliquerai alors ce phénomène par les frottements des deux feuillets de la séreuse desséchée. Cette espèce de sécheresse paraît être le premier effet de l'inflammation sur les tissus membranes. Ainsi on l'observe dans le coryza, sur la muqueuse nasale ; dans la rhumatisme, sur les synoviales ; et l'on peut, quand cette dernière affection est chronique et qu'il n'y a pas d'épanchement, déterminer un bruit analogue dans le genou, par exemple, en frottant la rotule sur les condyles."

It is strange, when we consider the great frequency of pericarditis, that these observations should not have attracted more

attention. Laennec, in his second edition,* declares that the stethoscope scarcely furnishes us with any certain sign of the disease, and it is remarkable, that he makes no mention of the opinion of Collin. Neither does Louis, in his excellent memoir on pericarditis,† in any way allude to the subject. It is to be observed, however, that his cases were examples of copious liquid effusion into the sac of the pericardium; whereas, the diagnosis which I have so completely verified, applies *principally* to the dry form of the disease. Bertin, however, alludes to the researches of Collin, in a very cursory and contemptuous manner, “Jusqu’ici l’auscultation n’a fourni aucun signe auquel on puisse reconnaître la péricardite aiguë, à moins qu’on ne vieuille regarder comme tel *le bruit de cuir neuf*, indiqué par M. Collin, auteur d’une brochure *sur les diverses méthodes d’exploration de la poitrine*.”‡

In the new edition of Andral’s *Clinique Medicale*, 1829, there is a chapter devoted to cases of pericarditis, but in none of the cases are the phenomena under consideration mentioned. In the last edition of Rostan’s *Cours de Medicine Clinique* we find the following remark:—“L’experience n’a pas encore prononcé sur la valeur du bruit semblable au craquement du cuir neuf, que l’on a cru entendre au moyen du cylindre.”§

On examining the late British works on diseases of the heart, I find that no observations, illustrative of the subject before us, have been made by the authors. Dr. Elliotson indeed declares, that in acute pericarditis, auscultation is only of negative use. The following remarks are from his lecture on Pericarditis:—

“On examination by the ear the whole heart is found

* *Traité de l’Auscultation Mediate*. 1826.

† *Memoires ou Recherches Anatomico-pathologiques*, par P. C. A Louis. Paris, 1826.

‡ *Traité des Maladies du Cœur, et des gros Vaisseaux*, par R. J. Bertin. Paris, 1824.

§ Rostan, *Cours de Medicine Clinique*.

acting more forcibly, and with a clearer sound than in health. But this is all. Auscultation appears to me, however, of negative use." And again, this distinguished physician says, "Neither have we the partially excessive or defective impulse or sound, or preternatural sounds of organic diseases of the heart."*

Doctor Latham has noticed, that in certain cases of pericarditis, a bruit de soufflet is audible:† and Dr. Hope‡ has confirmed his observations as to the occurrence of this phenomenon in cases of rheumatic pericarditis, and declares further, that he has observed it in every form of the disease. To the explanation which the latter author gives of this sign, I shall hereafter recur, and merely state here, that the direct diagnosis by the friction sound of the roughened pericardium, is not alluded to by him.

It would appear that no author who has written professionally on the subject of diseases of the heart, has verified the direct stethoscopic diagnosis of pericarditis. In fact, the only author that I can find, who has written since the time of Collin, and who brings his own experience to bear on the subject, is Broussais, in speaking of the symptoms of inflammation of the heart. "Nous ne disons rien de la douleur au toucher sur les parois de la poitrine correspondantes, de l'immobilité des côtes; mais il est un phénomène digne d'attention au quel peut-être on n'en a pas assez donné, c'est le bruit de parchemin que l'on perçoit très bien par le moyen du stéthoscope. En explorant avec cet instrument dans les péricardites commençantes, on éprouve la sensation que donneraient deux corps secs, comme du par-

* On the recent Improvements in the Art of distinguishing the various Diseases of the Heart. Lumleyan Lectures, by John Elliotson, M. D., &c. &c. London, 1830.

† London Medical Gazette, vol. iii.

‡ A Treatise on the Diseases of the Heart and great Vessels, by J. Hope, M. D. London, 1832.

chemin, qui frotteraient l'un contre l'autre ; et ce signe, quand il est joint à la douleur et à l'angoisse, ne peut laisser aucun doute sur l'existence de la phlegmasie."*

I shall now give the results of my experience on this interesting and important subject. It would appear, that much of the confusion that has existed with respect to the diagnosis of pericarditis, has arisen from not separating the consideration of that form of the disease, in which there is a copious liquid effusion, from that in which the surfaces of the pericardium are only separated by an exudation of lymph. It will be found, I think, that the general symptoms of these two varieties are often exceedingly different, and that those cases which most often prove fatal, with that assemblage of distressing symptoms noticed by all authors, more frequently belong to the first species ; while the second is often, as far as external symptoms go, a nearly latent affection. The researches of Louis, in which he has shewn the great applicability of percussion in the diagnosis, have greatly tended to remove the difficulty in the first variety of the disease, but in the dry form of pericarditis, percussion is only of negative value, and to those unacquainted with the disease in question, may often mislead in diagnosis.

The direct diagnosis of pericarditis is founded on the observation of certain phenomena produced by the morbid condition of the serous surface of the pericardium, these are twofold ; we have phenomena perceptible by the hand, and secondly, perceptible to the ear.

In the natural state of all serous membranes, the gliding of one surface upon the other meets with no opposition, and is not accompanied by any sound, but when from the effusion of lymph, for instance, these surfaces become for the time roughened, we have then, sounds produced by the friction, and vibrations communicated to the surface, and often perceptible to

* Commentaires des Propositions de Pathologie, 1829, tom. i. p. 398.

the hand. The constant and extensive motion of the intrathoracic organs, of course renders these observations more applicable to their lesions, than to those of other viscera. The consideration of the phenomena of friction in cases of pleurisy, throws great light on these signs in cases of pericarditis. The frottement of pleurisy is long known to be recognizable by the stethoscope, and I have shewn in my last communication in this Journal, that it is often perceptible to the hand: both these remarks apply equally to cases of pericarditis.

It may be stated generally, that in cases of pericarditis, the sensations communicated to the hand, and the sounds of friction, will vary according to the following circumstances:—

1st. The state of the effused lymph.

2nd. Its extent.

3rd. The existence or non existence of fluid.

4th. The advance or arrest of the process of organization.

5th. The process of obliteration of the cavity.

6th. The repetitions of inflammation.

The character of the sounds produced by the physical alterations of the inflamed pericardium, are, as I before stated, various. In some instances we have a rasping sound, very similar indeed to that produced in the worst cases of ossification of the valves; in others the sound resembles the creaking of new leather, to which it was originally compared by Collin. In others the sound is similar to the frottement of pleurisy, only modified by the action of the heart. It may further occur with a character between that of bruit de rape and bruit de soufflet, or it may completely resemble the latter phenomenon. Lastly, we may have a slight friction sound, perceptible only at the very commencement and at the termination of each diastole and systole of the heart.

In the progress of a single case, we have frequently observed these phenomena to pass through most, if not all of these modifications; nay further, nothing is more common than to observe the greatest difference of character in the sounds at dif-

ferent portions of the heart. The changes in character too, occur with great rapidity in some cases, while in others the signs remain constant for many days. These sounds are almost always perceptible with both sounds of the heart, and are often singularly modified by treatment; thus I have constantly observed, that after a free application of leeches, the sounds were singularly and speedily changed, passing from a loud râpe, accompanied by distinct fremissement, to a soft murmur like bruit de soufflet, and with complete disappearance of the feeling of friction.

The last observation which I shall make with respect to their stethoscopic character, is one of considerable importance, as regards the diagnosis between pericarditis and valvular disease. It is, that in by far the greater number of our cases, these sounds were not audible beyond the actual region of the heart. This is a most striking character. I have often observed, that on moving the stethoscope little more than an inch from a situation where the sounds were loud, they totally ceased, although the contractions of the heart continued distinctly audible. In two of the cases which are recorded, this character did not occur; in one, that of a child, in which the heart was hypertrophied, and with a slight alteration of the valves, we found that the sound was heard under the clavicles and along the spine; modified, however, from the rasping sound to that presenting a bruit de soufflet. In this case it must be recollected, that the diagnosis was verified by dissection. In the second case, that of the girl Kelly, the murmurs were audible beyond the region of the heart. Further observations are necessary, to determine how far the occurrence of the disease in children or females, may account for the transmission of the sounds.

I shall now return to the circumstances which we have found to have modified these sounds; and first with respect to the state of the lymph. It would appear, as might be expected, that the more uneven the surface of the heart, and the denser

the consistence of the lymph, the louder and more harsh will be the sounds, and the more distinct will be the fremitus. In the two cases in which these phenomena were most striking, (*see cases 1 and 4,*) the pericardium was exceedingly rough; in the first, from the existence of an old and mammillated deposition of lymph upon its surface, which was almost of a semicartilaginous consistence, and in the second, from the granular nature of the exudation. In the majority of cases too, these signs were much more distinct in the first periods of the affection, and gradually subsided with the progress of the case.

The extent of the effusion of lymph is another source of modification. Thus, in some cases, the signs exist only at the apex of the heart, in others merely at one side of the organ, and we have recorded one case where we were able to trace the extension of the disease over the entire surface of the heart.

But perhaps one of the most important sources of modification, is the effusion of fluid into the bag of the pericardium. In the examples of the disease which I have given, the effusion was almost altogether lymph, and in several no fluid whatever existed in the cavity. In such instances, supposing the heart to have been previously healthy, the sound on percussion will be clear, and the impulse of the organ plainly perceptible. It is in these cases that the phenomena of friction are most perceptible. When, however, a liquid effusion takes place to any amount, the conditions necessary for the production of these phenomena no longer exist. I have the notes of two cases, where the occurrence of extensive dulness coincided with the almost complete disappearance of the sounds and sensation of friction; and in which, after the absorption of the fluid, as shewn by the return of clearness over the region of the heart, the phenomena of friction again appeared. The occurrence of liquid effusion, however, does not necessarily imply the total disappearance of these signs, as I have often observed, that they continued principally near the base of the heart, although greatly modified in intensity. We can conceive why the oc-

currence of liquid effusion should cause a diminution or subsidence of the signs, as under these circumstances, the heart will be more or less extensively separated from the external pericardium ; but I also conceive, that the lubrication of the surfaces by fluid may have the effect, as in some instances the sound became greatly diminished, though the impulses of the heart could be still distinctly felt.

In the case of Kelly, the rasping sound continued at the base of the heart, after the sound on percussion had become extensively dull. I think that we should expect that the phenomena should continue longest here under these circumstances, as this is the situation in which the folds of the pericardium are probably nearest to one another.

But one of the most curious sources of modification is the process of organization, which may be suspended or interrupted by the recurrence of inflammation. In the second case, the gradual cessation of the sounds over the heart, except at the base, while the sound on percussion continued clear, led me to the diagnosis of obliteration every where, except at the spot indicated by the stethoscope. How completely this novel diagnosis was verified, I have already shewn. Under these circumstances, the following train of signs will generally be observed. At first we have a rasping sound and fremissement perceptible to the hand. These, which may at first be partial, become often general ; then the fremissement subsides, but the rubbing sounds continue, presenting from time to time various modifications. These in their turn begin to subside, and over portions of the heart are no longer audible, until at length all morbid sounds disappear. *The region of the heart all the time remaining clear on percussion.*

If during this process a new attack comes on, we have a reproduction of the phenomena over those situations where obliteration has not taken place. With respect to the question of obliteration, the diagnosis stands thus. If the rubbing sounds continue until the fatal termination of the case, we must not

expect to find obliteration, (at least complete.) If having once plainly existed, they cease, while the region of the heart continues clear, we may safely make the diagnosis of adhesion.

These phenomena I have no doubt, have constantly been mistaken for those of diseased valves. Indeed the similarity of the two classes of signs is often singularly great, they resemble as I have before stated, the bruit de rape or bruit de soufflet; and it strikes me as more than probable, that the occurrence of bruit de soufflet in pericarditis, as noticed by Drs. Latham and Hope, is often at least, to be explained by the physical state of the pericardium. The following are the circumstances which appear to me as calculated to assist us in distinguishing them.

1st. Their sudden supervention in a case where they had previously not existed. We can hardly conceive an amount of valvular disease to arise in a day or two sufficient to cause an intense bruit de rape.

2nd. The accompanying sign (when it exists) of the rubbing sensation communicated to the hand. This is quite peculiar.

3rd. The rapid change of situation, according to the extension of the inflammation.

4th. The occurrence of the sounds with both sounds of the heart, in a case which previously presented no sign of organic disease.

5th. Their subsidence under treatment, and their not re-appearing even when the heart is excited.

6th. The very slight extent to which, even when they are loudest, they are generally audible.

Before summing up the results of my researches on this subject, I may mention that Collin conceived the cause of the stethoscopic phenomena of friction (for he had not observed those perceptible to the hand) to be the dry state of a serous membrane, *previous to the secreting stage of inflammation.* Without denying that such a condition would cause a sound of

friction, I may remark that in all our cases, the existence of lymph in various forms seemed to be the cause of the signs.

I shall now state in the form of propositions, the general results of my researches on this subject:—

1. That in cases of pericarditis with effusion of lymph, the rubbing of the two roughened surfaces causes sounds perceptible to the ear, and vibrations communicable to the hand, by which the disease can be easily and surely recognized, even when all other symptoms are absent.

2. That the more rough is the state of the serous membrane, the more distinct will these signs be.

3. That the sounds accompany the two sounds of the heart in almost all cases.

4. That they are audible generally, only over the region of the heart.

5. That they present themselves with various modifications of character, but often resemble the sounds produced by extensive valvular disease.

6. That they are most distinct when the region of the heart continues with its natural sound on percussion, but that the existence of fluid does not necessarily imply their complete subsidence.

7. That they may re-appear after the absorption of fluid from the bag of the pericardium, or the new supervention of inflammation.

8. That the sounds may continue when the sensation of rubbing is no longer perceptible by the hand.

9. That they are singularly and rapidly modified by direct antiphlogistic treatment to the heart.

10. That by observing the progress and mutations of those signs, we can trace the process of organization, or of obliteration of the pericardial cavity, judge of the effect of treatment, and accurately ascertain the exact state of the pericardium.

11. That hence, it must be admitted, that auscultation is of direct utility in pericarditis, and that the diagnosis no longer rests on negative signs.

ART. IV.—*On Inflammatory Affections of the Brain and its Membranes.* By RICHARD CARMICHAEL, M.R.I.A., one of the Senior Surgeons of the Richmond Surgical Hospital.

It may be useful to give a few illustrations of the variety of symptoms, which an inflammatory state of the brain, or its investing membranes, is capable of producing.

The cases which I shall adduce for this purpose, have occurred within the last two or three months; and the symptoms being fresh in my recollection, are detailed from memory, assisted by reference to the Apothecary's file for the dates of the prescriptions.

I shall commence the detail of these cases by one, in which the event was unfavourable, but which will be found interesting and useful, as there was a post mortem examination. The other cases were all more or less successful, and the inflammatory state of the contents of the cranium was inferred from the symptoms, as well as from the advantageous effects of the mode of treatment adopted, on the principle of combating inflammation.

On the 18th of March last, I was called at a very early hour in the morning, to see Mr. H——, a robust, full man, about 38 years of age; I found him walking about his drawing-room, apparently in great anguish. He complained of violent pain in his ear, shooting upwards along the side of his head, which had affected him more or less during the preceding fortnight. He stated that he had been under the care of Mr. Barker of Great Britain-street, but that he had attended little to his advice, as he not only went to his office almost every day, but dined and supped out, and even had gone a hunting: imprudences, for which he paid dearly, as they brought on a violent accession of pain, and perhaps ultimately

occasioned the loss of his life. His pulse was quick, tongue white, and the expression of his countenance indicated great pain and inward distress.

I considered the case to be one of inflammation, and directed 16 leeches to be applied to the neighbourhood of the ear, and he was also directed to take two spoonsful every hour of a cathartic medicine, containing tartarized antimony.

I saw him again in the evening—the leeches had caused an unusually profuse discharge of blood, and the medicine had affected his bowels; his countenance was composed, and he said that he felt so perfectly relieved from pain by what had been done, that he would not again trouble me to visit him.

On the 20th, I received a message from him, requesting me to meet Mr. Barker. I found him again suffering from pain, but not to the same degree as the first morning I had seen him. His eye looked, however, dead and languid; the expression of his countenance was bad, and he complained very much of sickness of stomach. He was ordered a bolus, containing 3 grains of calomel and 10 grains of compound powder of ipecacuanha, to be followed by a cathartic medicine; a blister was applied behind the affected ear.

21st. He complained still of pain in the ear, shooting up the side of his head; the expression of his countenance not altered. He had a bad night—the pulse was frequent and feeble. I determined to get him under the influence of mercury as quickly as possible, and therefore ordered him one grain of calomel, to be taken every third hour.

22d. He felt better, the pulse was far less frequent, not more than 80, his stomach was, however, a good deal disordered; it was therefore determined to give him occasionally, in addition to the other means, a couple of spoonsful of a cold infusion of bark, in a state of effervescence, and at night, in order to induce sleep, a bolus, composed of three grains of ext. of hyoscyamus, with two grains of camphor, was ordered.

As my patient felt himself obviously improving, he intimated his wishes, through Mr. Barker, that his relative, Mr. Irvine, should now take charge of him. And no person was more capable of the office, thus imposed upon him, than this gentleman, who had just returned after visiting the different hospitals in France, Italy, and Germany ; and, I shall venture to predict, will, at no very distant period, become a distinguished member of his profession.

At this juncture, when I was thus exonerated a second time from my attendance by the patient himself, the means I used had only produced a mitigation of the symptoms. I hoped the case would have gone on progressively improving, but in this I was disappointed.

The 24th, two days afterwards, Mr. Irvine called on me to beg I would accompany him to see Mr. H——, who had suddenly become lethargic and comatose, so much so, that he feared the Apothecary's assistant had put an over-dose of acetate of morphine in a draught, in which one-fourth of a grain only had been ordered, with the view of procuring ease and rest.

On arriving, I found him in a complete state of coma, incapable of moving, speaking, or even of seeing objects, his breathing deep and stertorous; he had, however, still the power of swallowing ; and while we sent a messenger to the Apothecary's, to ascertain whether any mistake could have occurred in the compounding of the medicine, we made him drink large draughts of warm water, containing mustard, with the view of emptying the stomach, which was accomplished without difficulty or straining. The assistant who made up the draught soon attended, assuring us that the medicine was compounded strictly according to prescription. Under these assurances, and no relief having been obtained by emptying the stomach, we abandoned the notion of any mistake having occurred : we immediately opened the temporal artery, and abstracted 16oz. of blood, but without relief.

Mr. Crampton was called upon to assist us by his advice ; Mr. Barker also was in attendance ; a blister was placed on the head, a sinapism on the epigastric region, and a cathartic enema administered, none of which, it may be presumed, were attended with advantage. Strong convulsions set in—stertorous coma succeeded, and the patient died during the night.

Appearances observed on the post mortem examination, 12 hours after death—at which Mr. Crampton, Mr. Irvine, and Mr. Barker, favoured me with their presence :—

On removing the body from the bed to the table, in order to make the examination, a large quantity of a dark-coloured fluid, resembling blood, mixed with other fluid, flowed from the mouth.

On opening the head, the dura mater was found very adherent to the bone, but no appearance of inflammation of that membrane.

An extensive purulent secretion, of a pale greenish colour, was found between the arachnoid membrane and pia mater, where these membranes invest the lower surface of the middle lobe of the right hemisphere, and the lower and lateral surface of the middle lobe of the left side, extending over a portion of the anterior lobe of the same side. On slicing the brain, the substance appeared studded with many red points : on opening the lateral ventricles, about half an ounce of fluid was found ; choroid plexus, not more vascular than usual ; some purulent secretion was found on superior surface of cerebellum of left side, also on the pons varolii and commencement of medulla oblongata.

The pia mater between the convolutions of cerebrum on left side, was as red as the conjunctiva of the eye, in inflammation of that membrane.

The petrous portions of temporal bones were perfectly sound ; nor did the neurilema of the seventh pair of nerves appear inflamed, notwithstanding the violent pain complained of in the right ear, and the last day in the left.

On reading this case, we are forcibly struck with the

resemblance it bears to that of Mr. J. Cooper, detailed by Mr. Crampton in the 5th Number, Vol. II. of this Journal. The only difference was, that in the one the pain was referred, at the commencement of the attack, to the eye, in the other to the ear. But no marks of inflammation after death were discernible in either organ; while the usual signs of it, in a strongly marked degree, were extended over the greater part of the surface of the brain in both instances. The case detailed by Mr. Crampton was certainly more acute and rapid in its progress, but the most active antiphlogistic plan was found incapable of arresting the progress of the disease. Both were attended with coma; in neither was there delirium or symptom of paralysis; but convulsions occurred in the one just detailed.

In the remaining cases, which I shall now relate, as having lately come under my observation, there was fortunately no opportunity, by the death of the patient, of examining the contents of the cranium; but from the symptoms it is inferred, that inflammation or increased arterial action had occurred in each.

CASE 2.—Early in May last I was called on to see H. H. Esq. aged 70, residing in Richmond-place, on account of intense head-ach, with which he had been afflicted for some time, and an anthrax situated on his neck. Previous to the occurrence of the anthrax he had been attended by Mr. Barker, of Great Britain-street. His tongue was foul, and, as is usually the case where anthrax occurs, the digestive organs were considerably deranged. I was, therefore, led from these circumstances, to attribute the head-aches to the state of the stomach; a suspicion was, however, excited, that the pain of his head might be connected with increased circulation in the brain, from frequent attacks of vertigo, and a considerable failure in the strength of his limbs, so that he could scarcely walk without tottering. These symptoms, might, on the contrary, be attributed, in an old man, to general weakness, arising from a deranged state of the digestive apparatus.

On the latter principle I determined at first to treat him. The anthrax was fully scarified; his bowels were opened daily with pills of ext. of colocynth and blue pill, and at the same time small doses of sulphate of quinine, with sulphuric acid, were given to him, but wine and all fermented liquors were strictly prohibited. Under this system the anthrax, in the course of a fortnight, threw off its sloughs and healed; but the head-achs continued equally severe, notwithstanding due attention to the stomach and bowels. Frequent attacks of vertigo, and an increased weakness of limbs, indicated that the brain was primarily engaged. Leeches were in consequence ordered to the temples, cold applications to the head, and a blister to the nape of the neck, followed by the use of tartar emetic ointment; while blue pill, combined with colocynth, was given with the double view of acting on the bowels, and of exciting such a mercurial action as would tend to check any inflammation that might exist in the brain or its membranes. The head-achs under this system were soon lessened, but he began to lose his speech; his memory failed him so far, that he forgot the most common words, and from being intelligent and active, became quite imbecile in intellect and unable to move. He now remained altogether in bed, in a semi-lethargic state, where his friends were in daily expectation of witnessing his demise, an expectation in which, it must be confessed, considering his advanced age, I could not but concur, particularly as his debility was so great, that he experienced the utmost difficulty in coughing up the phlegm, and I feared that suffocation from this cause would soon terminate his life.

At this juncture of the malady, 12th June, I determined upon trying, as a last resource, a tartar emetic plaster to the region of the occiput, composed of ʒii. of tartar emetic, blended with as much burgundy pitch as was necessary. The power, as well as utility of this application I had often witnessed, particularly some years since, in the instance of the Bishop of —, whom I saw 24 hours after an attack of apoplexy, although I

had to travel 100 miles to see him. So strongly marked was the diminution in the functions of the brain and nerves in this case, that the patient lay in a lethargic state, incapable of feeling the sharpest mechanical irritation applied to the skin of the extremities, and on being questioned could hardly pronounce the monosyllables yes or no, in a manner to be understood. Immediately on the occurrence of the attack, bleeding, purgatives, and the usual remedies, were, with great propriety, put in practice. I recommended, on my arrival, in this apparently hopeless case, the application of a strong tartar emetic plaster over the occiput; and I afterwards understood from his immediate medical attendants, that it produced a most powerful effect, even to sloughing of the integuments.

The patient gradually recovered, and has since been in the possession of his usual powerful intellect, as evinced by several publications from the pen of this learned prelate. But paralysis of one side remains, which, however, does not prevent the public from benefiting from the clear conceptions of an energetic mind.

The usual remedies were, no doubt, resorted to in this case, but I attribute a vast deal to the application in question, which is so powerful at times as to require close watching, particularly on the integuments of the scalp. I have also seen it produce deep sloughing on the knee joint, but I never make use of this mode of applying tartar emetic externally, except in very obstinate chronic, or in almost hopeless acute cases.

But to return to the case under consideration. The plaster, after it had been applied 24 hours, began to excite considerable pain, and rendered my patient, who had been previously lying in a slumbering apoplectic state, very restless and uneasy. It was, however, kept on 64 hours, and on its removal it was found to have produced an extensive sloughy-looking sore. Previously, however, his recollection and powers of speech had returned, and his children, who had assembled from distant parts of the country to pay him the last filial attentions, were

astonished to witness the change that had then taken place. His intellect and powers of speech were almost suddenly restored. He sat up in his bed, and called for what he wanted in his usual manner, and evinced as much mental energy as he had possessed for years before. His bodily powers, however, were much reduced, these he gradually recovered, and he is now, July 12th, as well as he had been previous to his illness.

CASE 3.—On the 5th of June last, I was called upon to see Mr. M. K., aged also about 70, a full short-necked man, residing on Burgh-quay. I found him lying in his bed in a lethargic state, his face flushed and his pulse full, strong, and about 112. Mr. Dobbin, Apothecary, residing in D'Olier-street, had, with great propriety, taken, previous to my visit, sixteen ounces of blood from his arm. This gentleman informed me, that when he saw the patient first, he lay in a complete apoplectic state, devoid of sense or the power of motion.

I directed immediately six grains of calomel, to be followed by an active purgative medicine, and cold applications to the head.

On the following day the same medicines, which operated well, were repeated, and a blister was applied to the nape of the neck.

On the 8th and 9th, his face was considerably flushed, and the lethargic symptoms seemed to increase. His breathing also was oppressed, and he expectorated phlegm with great difficulty. In order to meet these symptoms, 20 leeches were applied each day to the temples and head. He was ordered two grains of calomel and the same quantity of ipecacuhana every fourth hour. I preferred leeching to general blood-letting: 1st, because I have frequently witnessed, both in apoplectic attacks, and in that lethargic state which follows severe injuries of the head, a sudden sinking of the patient after extensive general blood-letting, from which he does not always rally; and, 2ndly, although this patient was of a full habit, yet he was old and infirm, and having had previously several severe attacks both of

the head and chest. The incapability in this, and in the preceding case, to cough up phlegm, appeared to me to be owing either to general diminished powers, the consequence of an oppressed brain, or to a particular affection of the pneumogastric nerve, therefore all my efforts were directed to relieve the brain, and none appeared so capable to arrest the increased arterial action of that organ and its investing membranes, as the gradual drawing off of blood by means of leeching, assisted by the well known powers of mercury upon membranous inflammation.

On the 10th a blister was applied to the occipital region, the pills of calomel were continued. 11th and 12th, he was obviously better; on the latter day, the pills were directed to be taken only morning and evening, due attention being paid to the state of the bowels.

15th. His convalescence was now established, and all active means were discontinued; considerable debility, as may be presumed, must have succeeded so severe an attack, and the adoption of means necessary to combat it. His strength is, however, now quite restored.

CASE 4.—On the 1st of June last, I was sent for express to see a gentleman, about forty miles from Dublin, who lay dangerously ill. He was also about 70 years of age, of rather a full habit, and very subject to gout. Some months previously he was thrown from a gig, by which he received a severe contusion on the head. He slowly recovered from the fall, but his friends observed, that although he occupied himself on his estate, which was extensive, and continued to perform the duties of a magistrate and a country gentleman, yet his manner was greatly altered. From being intelligent and active, every thing now in the way of business made him peevish and irritable, he became also inattentive to passing events. In fact, it was obvious that the injury he received had made a deep impression on the sensorium. For some time he attended to the admonitions of his medical attendant, Dr. Wright, of Arklow, but

latterly he neither heeded his advice nor the remonstrances of his family, and he ate meat and drank wine like a person in the enjoyment of full health. The consequence was, the severe attack which occasioned my visit. I believe I saw him on the third day of the attack; he was in bed, tossing from side to side, tearing at his shirt, and endeavouring to kick off the bed-clothes. Any attempt to speak was totally unintelligible, and he did not appear to recognize any of his numerous and anxious family who surrounded him. It was with difficulty, on account of the incessant motion of his arm, and impatience under the slightest restraint, that I could count his pulse. As well as I could ascertain, they were about 120, with some degree of sharpness. His bowels had been for some days obstinately confined, and were not moved, although large doses of calomel and croton oil had been administered. In consultation with Dr. Wright, I stated, that the impression on my mind, from the symptoms I witnessed and the history of the case, was, that the patient had perhaps since the accident, laboured under a chronic inflammation of the brain and its membranes, with its usual consequences of thickening and lymphatic deposition; upon which a more acute attack of inflammation had arisen, in consequence of the very unguarded and stimulating regimen he had of late adopted. I therefore proposed taking blood from his arm in the first instance, that possibly the depletion might predispose his bowels to act by relieving the brain, and once this was accomplished, that his system should be mercurialized as rapidly as possible. Dr. Wright excited a good deal of doubt in my mind, as to the propriety of abstracting blood, by mentioning that he had bled him moderately at the commencement of the attack, but that his pulse fell so rapidly, with coldness of the skin and extremities, that he feared his immediate dissolution would have been the consequence. Notwithstanding this experience of its effects, and the further communication that he was a very gouty subject, yet upon the whole view of the case I was of opinion, that his symptoms depended on

inflammation, and that therefore blood ought to be extracted. Leeching was out of the question, as it was impossible to keep his head quiet for a moment. We therefore took twelve ounces of blood from the arm, and gave him eight grains of calomel. In the course of three hours, the medicine had a powerful effect on his bowels, although previous to the bleeding it had resisted treble the quantity. After his bowels had been affected he became cold and feeble, with a small wiry pulse. In consequence an anodyne draught was given to him, which restored his pulse, and threw him into a sound sleep for several hours, a refreshment he had not enjoyed for many nights, and he awoke in the morning able to answer questions with distinctness.

Matters seemed thus far very favourable, and I returned to Dublin, having previously agreed with Dr. Wright, that the impression made on his complaints should be followed up, by the exhibition of calomel at frequent and regular intervals, so as to affect the system. We also agreed to blister the occiput, while cold applications were kept to the forehead and upper part of the head.

I received a letter afterwards from Dr. Wright stating, that ten ounces more of blood were taken on the third instant, that the mercurial system was followed up extensively until the ninth instant, without producing any effect however on his mouth, when it became necessary to lay it aside in consequence of diarrhœa, with hemorrhage from the bowels. The back of the head had been blistered, and when the part was nearly healed, powerful counter-irritation, as had been agreed upon, was excited by dressing the part with tartar emetic ointment. At times there was considerable sinking of the pulse with irregularity, but small doses of morphine always succeeded in restoring them. On the 12th all active means were discontinued, and the patient was ordered equal parts of camphor mixture and infusion of valerian three or four times in the day. His strength was supported all the time with chicken broth, and such mild nourishment as he was capable of taking. So

much for the treatment. The following letter which Dr. Wright had the kindness to send me, contains a clear and concise account of the symptoms and progress of this interesting case from its commencement:—

“EMMA VALE,

“Arklow, June 30, 1833.

“MY DEAR SIR,

“You will be glad to hear, that our patient goes on prosperously in the way of bodily improvement, but I regret to say, the mental malady is not diminished, nor is it to be expected that his intellects will ever be better than they are. His case is one of great interest, and I feel pleasure in giving you a sketch of its progress.

“The attack commenced with sudden delirium, increased vascular action, and nervous excitement, great inquietude, constantly kicking the bed-clothes off by means of the feet, tearing off his shirt, and getting out of bed and in again; suppression of the biliary, intestinal, and urinary secretions, a high degree of cerebral excitement, evinced by hot scalp and unnatural fulness of feature, as well as by the lively eye. These symptoms continued, and rather increased in intensity till the fourth day, when he got all the unfavourable symptoms of the last stage of typhus fever. The pulse sunk, he became comatose, with subsultus tendinum, involuntary evacuation, catching at imaginary objects, picking the bed-clothes, hiccup, tremulous motion of the muscles, falling of the jaw, with stertor, and hemorrhage from the bowels.” [This symptom was owing to the mercury which was then discontinued.] “On the seventh day there was a crisis; the symptoms generally suffered a remission, but on the eighth day there was an increase of the symptoms again, or rather a return of the former symptoms in a modified degree; there now came on a convulsive starting, and involuntary throwing about of the hands. On the fourteenth day another favourable change took place; there was some little looking up during the week

following, and on the 21st day there was another marked crisis; and from that day his health has been gradually improving. He is daily gaining strength, but I am sorry to say the mind does not improve: he labours under marked imbecility. Although the lawn of ——— and his own improvements are before him, which he notices and talks of, he thinks he is at Newtownbarry: he is quite cheerful and merry, but will not dress himself properly, and he must be humoured or he would become restive; sometimes he converses rationally for a few minutes, but soon flies off to some fancied subject.

“ Believe me, my dear Sir,

“ Most truly your’s,

Richard Carmichael, Esq.

“ D. WRIGHT.”

In reading this detail, we are more inclined to feel surprise that life could have been preserved, after the appearance of such a formidable train of symptoms, than that imbecility of mind should follow, where the instrument of all thought, sentiment, and feeling, had been so violently assailed. But as it appears that this patient “ sometimes converses rationally,” we are not authorized to despair altogether of a restoration of his mental faculties.

CASE 5.—On the 6th of last May, a drunken fellow of the name of Michael Reilly was admitted into the Richmond Hospital, under Dr. Hutton’s care, with his ear literally ground off by the friction of the wheel of a dray, which he was attempting to drive while in a state of most deplorable intoxication.

Not only was the entire of the left ear destroyed, but a frightful lacerated wound, at least five inches in diameter, on the side of the head, exposed large portions of the temporal and parietal bones. The squamous suture was as clearly seen as in a well prepared cranium for lecture, and the circumvolutions of the wheel had left a distinct and deep track upon the parietal. Upon being asked how it was possible that he could have been reduced to such a state of helplessness, as to lie quietly on his

dray while he felt the wheel grinding off his ear, he very coolly replied, while scratching the surviving ear; "Why thin I'm thinking, your honour, that somehow or other I must have been purty well *tossicated* at the time; but I believe it was more the fault of this big coat o' mine, though faith, as you see Sir, *it* was sober enough anyhow. It caught the wheel or the wheel it, I wont say which; I was dragged on one side, my hat fell aff, and the wheel ground the ear aff o' me entirely."

This poor martyr to his sensualities held his life for several weeks in a state of great jeopardy. Incessant vomiting followed the accident, his countenance sunk, and was expressive of intense suffering. After as much of the gravel and extraneous matter was removed from the wound as could be washed off, it was poulticed. He was bled, and purgatives were administered, erysipelas however set in, and extended down the neck; from this however, he recovered in five or six days. Still he complained of pain in the head, the character of his countenance was expressive of great internal distress. The wound had a sloughy appearance, and the discharge had become scanty. He complained of a sense of weight about the precordia, and the nurse reported that he was at times delirious. On the 12th I saw him, in consultation with Dr. Hutton, to whom I stated my belief that those symptoms arose from inflammation within the cranium; in fact, that meningitis had set in. He was so reduced, that the propriety of blood-letting seemed very questionable; we were therefore ontented with directing mercury with the view of affecting his system. In four or five days amendment took place, but the blue pill ordered was continued during three weeks, and until the headach and threatening symptoms were entirely removed. The wound soon began to suppurate freely, and afterwards granulate; and exfoliations of the injured portions of bone took place, so as to permit the pulsation of the brain to be visible. The wound is now nearly healed, his appetite is good, he is every day gaining

flesh, but he is still (July 14th,) detained in the hospital until the wound is quite healed.

CASE 6.—Richard Hamill, aged 42, of an unhealthy aspect, was admitted 25th June last, into the Richmond Hospital, under Dr. Hutton's care. At the time of his admission he was unable to stand for any length of time, and tottered like a drunken man when he attempted to walk, so much so, that he had frequently fallen during the previous five weeks, the period of his illness. He had constant vertigo. His vision was very imperfect, objects appearing double, indistinct, and magnified. He complained also much of noises in his head. The sense of feeling was also injured, as well as the muscular powers, for he was incapable of grasping any object firmly. The treatment adopted was general blood-letting, purgatives, and counter-stimulants to the neck, and the shower bath.

On the latter end of June, in going through the wards, I saw him for the first time, with Doctor Hutton, and we agreed to put him under the influence of mercury. One grain of calomel was ordered three times a day, and a tartar emetic plaster to the back of his head. Under this plan, his amendment was decided and rapid, and he was discharged convalescent, on the 13th of July, able to return to his work, that of a harness maker, in the firm of an extensive coach factory.

I shall conclude these cases by a few desultory observations. It ought to be recollected, that they occurred within a month or two previous to publication, and may justly be considered as fair specimens of affections of the head, to be met with in every day practice, not being selected from note books of years' standing, for the purpose of supporting some hypothesis or peculiar opinions. They, however, afford some useful facts, in shewing the insidious nature of inflammation of the brain and its membranes; that neither a pain in the ear nor a pain in the eye, ought to be considered as trivial complaints; that in many instances, the inflammatory symptoms are soon followed by those of a compressed or disorganized brain, and that the remedies

most to be depended upon, are bleeding, mercurializing the system, and powerful counter-irritants.

There is a peculiar expression of the countenance, in cases of acute inflammation of the brain and its membranes, a notion of which, it is impossible to convey by words, but it is expressive of unremitting anguish or distress. The difficulty of distinguishing between menengitis and cerebritis, is admitted by every practitioner. In the advanced stages of inflammation, it would be idle to attempt discrimination: so rapidly does this process extend from one part to another, that, if it commenced in the pia mater, it would soon spread to the parenchyma of the brain, and vice versa. This may be, in some degree, illustrated, by a consideration of what we know takes place within the knee, or other joints. Synovitis, if not checked, will sooner or later affect the cartilages, and disease of the cartilages or bones will, in the same manner, extend to the synovial membrane.

Inflammation, while confined to the meninges, is, probably, productive merely of pain, and the other distressing concomitants of this process, which may be supposed to arise, when assailing a membranous part, confined within an unyielding bony encasement. While inflammation of the brain itself must necessarily interfere with the functions of that important organ, or rather assemblage of organs; so that, in addition to the symptoms of inflammation, a disturbance or cessation of some of the cerebral functions may point out the locality of the disease; such as, vertigo, indistinctness of vision, tinnitus aurium, weakness and tottering of the limbs, and numbness of some part of the extremities. But on this point of pathology, we may look for assistance to the doctrines of phrenology, which, if they have any pretensions to truth, will afford a clue, to point out the very portion of the brain which is affected. For instance, if the patient's verbal memory be lost, to such a degree, as that he forgets the most common words, and if his powers of articulation are, at the same time, impeded, we may conclude, that the basis of the anterior lobes of the cerebrum is affected, and even that the

important origins of the 5th, 8th, and 9th pairs of nerves in the pons varolii and medulla oblongata, are engaged in the disease.

If vision is double, or imperfect, we may infer, that the two anterior of the tubercula quadrigemina, the supposed origin of the optic nerves, are also affected.* If common every day events be forgotten, and the patient speak or wander irrationally, mistaking one thing or one place for another, we have grounds for supposing, that the anterior lobes of the brain, which occupy the forehead, are chiefly engaged. But phrenology is much more likely to be useful, in pointing out the precise seat of mental derangement, particularly the varieties of monomania; for inflammation extends so rapidly, that it is not unlikely, once it attacks any portion of the brain, if not checked, that it will soon extend to every other. And this leads me to make a few brief observations on the treatment of inflammation of the brain and its membranes.

Bloodletting is of course, our most effectual means for stopping its progress. But my experience is decidedly against large depletions; 30 or 40 ounces are often taken away at once, from a person threatened with apoplexy, or lying in that lethargic state, which so frequently follows external violence. But collapse is apt to succeed such a depletion, from which the patient may never recover. No precise rules can be laid down, respecting the quantity which ought to be taken; the judgment of the practitioner must, of course, be guided by existing circumstances: but this much I may observe, that small bleedings, frequently repeated, so as to keep up a kind of drain from the system, are equally effectual, and unattended with danger, as

* In a great majority of the cases of amaurosis we meet with, the disease is preceded by intense pain, not in the eyes, but in the head, a sufficient indication, under the views we have taken, of the existence of inflammation and its consequences in that portion of the brain which gives origin to the optic nerves.

If mercury fails in remedying or curing this malady, is there any other agent upon which we can place any reliance?

the practitioner is thus enabled to feel his way. After the violence of arterial action has subsided, for the same reasons leeching extensively the scalp has peculiar advantages. There is an intimate connexion between the scalp, and surface of the brain, which is strongly exemplified, in a case detailed at p. 2 of this number of the Journal, by my colleague at the hospital, Dr. McDowel. I did not see the patient, Mary Spencer, until she was comatose, when I was called upon for my opinion, respecting the propriety of applying the trephine. Suppuration had taken place extensively on the outside of the cranium, along the orbital plates, which support the anterior lobes of the brain; and these lobes were found, after death, inflamed, softened, and overspread with purulent matter. The scalp over the right side of the frontal bone was puffy and detached, which pointed out the place for the application of the trephine; while immediately underneath, pus was found on the dura mater, and also extensively spread over other parts of the brain, between the pia mater and arachnoid coat. I had no opportunity of forming an opinion respecting the original seat of her disease, whether it commenced internally on the brain, or externally on the periosteum. The case is adduced here, merely as a strong exemplification of the intimate connexion which exists between the two surfaces, and therefore points out the utility likely to result from extensive leeching of the scalp, in inflammatory affections of the brain and its membranes; also the benefit likely to result, after depletion, from powerful counter-stimulation of the scalp, in extreme cases; the utility and striking effects of which, were well exemplified in the details contained under Case 2. The occipital region was preferred for the application in these, as well as in numerous other instances, because it was esteemed the most distant part of the head from the seat of the inflammatory action; the cerebellum being seldom found affected in those who die of apoplexy. The application of counter stimulants, *immediately* over inflamed parts, not unfrequently increases, instead of diminishing the mischief, as we find is often the

case in synovitis of the joints, and should never be employed, except the arterial action of the part had been previously reduced by appropriate depletions.

In the treatment of inflammatory affections of the brain and its membranes, next to blood-letting in efficacy stands, in my opinion, the mercurialization of the system. The beneficial effects of this process in stopping the progress of inflammation of membranous parts, is most satisfactorily demonstrated every day by the exhibition of mercury for iritis. Frequently in this affection, the pain, change of colour, and depositions of lymph on the iris, occasioned by the inflammation, began to disappear even before the mercury has had time to evince its usual effects on the gums of the patient. Perhaps other agents may exert an equally specific (I use the word for want of a better) effect upon other membranes. Thus there are strong grounds for believing that terebinthines exert a peculiar influence over inflammation of the mucous membrane, a familiar example of which we have in the effects of balsam copaivæ in gonorrhœal inflammation of the urethra; and I may also adduce the effects of turpentine in reducing the inflammation of the uterus and intestines, which attends, or rather constitutes, puerperal fever.* But

* Notwithstanding the attention which puerperal fever has excited, it is admitted that great uncertainty still remains respecting its true nature and appropriate mode of treatment. It certainly does not yield, like peritonitis, to bleeding and mercury, and is altogether a disease of another type. Dr. Lee, in an excellent article on puerperal fever, inserted in the *Cyclopædia of Practical Medicine*, remarks, "In two cases observed by us, the lining membrane of the uterus had become soft, flocculent, and completely disorganized like the mucous coat of the stomach and intestines in certain inflammatory diseases." My friend Dr. Labatt, whose opportunities, as Master of the Lying-in Hospital, of investigating the nature of this disease have been most ample, informs me, that in every post mortem examination he made of those who died of puerperal fever, he found the mucous or internal membrane of the uterus in the same state as that described by Dr. Lee. No doubt other tissues, as the muscular and peritoneal coats of the uterus, and even of the intestines, may, in the progress of the inflammation, become engaged,

to return to mercury. This powerful instrument has not been made use of as it ought, for inflammation which succeeds to injuries of the head, and for which the trephine is so often vainly employed for the purpose of giving exit to matter, when the symptoms of a compressed brain follow those of inflammation, and which, in 99 cases out of 100, is found beyond the reach of operation, to be extensively diffused between the pia mater and arachnoid coat.

In all surgical writers on the subject, we find futile attempts to establish an accurate diagnosis between the symptoms of concussion and compression. When a blow is inflicted on the head, more or less concussion of the brain must take place, whether or not the violence has been sufficiently great to rupture a blood vessel on the moment. If a vessel should have been ruptured, giving rise to compression, the patient's symptoms are attributable to both causes. But concussion is always followed by more or less of inflammation or increased vascular action, and this inflammation, if not checked, may produce depositions, attended by coma, and all the symptoms of a compressed brain. The attempted diagnosis is therefore of no practical utility. The treatment is the same, except, perhaps, in the very rare instance, when the middle artery of the dura mater happens to be ruptured, in which case the immediate application of the

but I would call the attention of those, to whom the treatment of this disease naturally falls, to endeavour to ascertain which of these tissues is *primarily* affected. With respect to the extraordinary and salutary effects of turpentine in this disorder, introduced into practice by the late Dr. Brennan, many remarkable instances have come to my knowledge. It affords the most powerful assistance in removing the tympanitis which always attends it. Turpentine also exerts a most salutary influence in a tedious, protracted, intestinal fever, to which children are subject. This fever, from its commencement, evinces an irritated mucous membrane, and in its advanced stages is attended with obstinate tympanitis. Turpentine in appropriate doses, often acts like a charm in removing the latter formidable symptom, and is the only known remedy to meet it, from which, according to my experience, benefit can be expected.

trephine may be of use. It is needless to observe, that the preceding observations do not apply to cases of a depressed bone, where the cause of compression is obvious.

There is no more difficult point in practice than to ascertain, at times, when a head-ach is symptomatic or idiopathic, particularly as it is allowed that head-achs, which at first occurred from sympathy with the stomach or other parts, may, from long continuance and severity, produce inflammation and its consequences in the brain or its membranes, and thus become idiopathic. This is too extensive a subject to engage on, in a paper which has already exceeded its just limits. Where doubts exist, a close attention to the *juvantia et ledæntia* of regimen and remedies, will greatly assist us in arriving at a correct judgment. This much I must remark; that it appears to me that idiopathic head-achs, depending upon chronic meningitis, are more general than is usually imagined; and that we often amend or cure the disease with remedies exhibited for the purpose of acting on the digestive organs. Thus mercury, either given as a purgative or an alterative, may remove chronic meningitis, the head-achs be consequently cured, and the practitioner confirmed in the truth of views which he had erroneously adopted.

Periodical returns of head-ach are usually esteemed nervous or sympathetic. But as it is the character of many painful affections of the nerves and their neurilema, to return at regular periods, the same regularity is likely to occur in similar affections of the brain and its membranes. These affections often depend upon inflammation, as is sufficiently illustrated in the fact that almost every one has experienced in his own person, of the periodical returns of tooth-ach, when the nerve is exposed by caries of a tooth, and thus with its neurilema consequently inflamed. The attacks of sciatica, a disease in which the neurilema of the largest nerve in the body has been often found on dissection thickened by deposition of lymph, and to exhibit other signs of inflammation, are remarkably periodical

and regular in their returns, of which I, in my own person, have had most woeful experience.

Many dyspeptic patients, particularly those who have chronic affections of the liver, are subject to discharges of blood from the bowels; these discharges in general take place from the hæmorrhoidal veins, but sometimes from vessels more deeply seated. When not excessive they are always attended with advantage. If these salutary visitations cease, the patient is very liable to have all the feelings which indicate a too rapid circulation of blood through the brain, such as vertigo, dimness of sight, noises in the head, with weakness, tottering, and numbness of some part of the extremities. In such instances, an imitation of the mode which nature takes to relieve the system is the most effectual; and, therefore, the frequent application of leeches to the anus is attended with the most salutary effects.

In every case of hydrocephalus which I have seen terminate favourably, mercury has been extensively used, not with the view of exciting absorption of the effused fluid, but of stopping inflammation of the brain and its membranes. General and local blood-letting, with counter-irritation, have not been neglected in those cases, particularly the powerful application of tartar emetic ointment, while the surface of the scalp was still tender after having been blistered.

When an eruption on the face and head, of an erysipelatous character or tendency, suddenly recedes, and the patient at the same time becomes lethargic and comatose, the counter-stimulation of tartar emetic ointment affords a most powerful auxiliary towards rescuing the patient from his perilous situation. It is far more efficient than blistering; the latter only excites the deposition of serum, while the former causes the secretion of pus, the production of which must necessarily excite all the energies of the organization of the part. For which reason, perhaps, Jenner, when he introduced it into practice, considered its effects more as a succedaneum to a spontaneous eruption, which is often observed to relieve the derangement of internal organs, than as a mere counter-irritant.

FROM these views, I might be supposed desirous of encouraging the indiscriminate use, or rather abuse of mercury, a weapon equally capable of doing evil as good, so general are the complaints under consideration, for which it may be prescribed, extending from a common head-ach up to phrenitis or apoplexy. Yet I flatter myself, that I need not feel any apprehension of being esteemed an advocate for the unnecessary and excessive use of mercury, having the satisfaction of knowing that the principles I have recommended for adoption in the treatment of another class of diseases, have curtailed its use to at least a tithe of its previous consumption. But even in the class of diseases alluded to, however unnecessarily it had been employed, it is, under appropriate circumstances, a most useful remedy ; particularly when we have to contend against venereal inflammation of the periosteum or membranous parts, an observation closely connected with the subject of this paper, as venereal head-achs from this cause are frequent and severe. But there are still routine practitioners, even of character, who persist in administering mercury for every symptom that can be called venereal, and there are others who, sailing in an opposite current, will not prescribe it any instance that can be supposed to belong to the same class of diseases. Both are equally wrong, but, of the two, the former are the most mischievous. Routine practitioners, whose motto is, "Tell me your disease, and I'll give you a cure," are the bane of society. It is convenient, no doubt, to name and class diseases ; but, it must be acknowledged, that we as seldom meet two cases precisely alike, as two human physiognomies. A practitioner of experience, in order to be useful and successful, well knows that he must consider every case separately on its own merits, and treat the disease, no matter by what name it has been christened, according to existing symptoms, and as it may be modified by external agents, and by the age, powers, constitution, and idiosyncrasies of the patient.

ART. V.—*Experiments and Observations on the Motions and Sounds of the Heart.* By HUGH CARLILE, A.B., Demonstrator of Anatomy in the University of Dublin.

THE important office which the Heart fulfils in the animal economy, has at all times rendered an inquiry into its functions one of interest and utility. Many circumstances connected with the nature of this inquiry have contributed to uncertainty in its results, and to difference of opinion amongst those who have been engaged in its prosecution. Such are the obscurity of the heart's movements, the intricacy of its structure, and the difficulties which necessarily attend the examination of its actions in the living body. Besides these sources of error, others exist in the prevailing tendency to ascribe to the heart qualities not discoverable in similar tissues elsewhere, and in the disposition to explain, by the properties of inert matter, phenomena which owe their existence to those of living structure. Accordingly, there prevails much diversity of opinion, concerning many circumstances of the heart's action, amongst those who have turned their attention to this subject.

With a view to a satisfactory explanation of some of these disputed points, I have had recourse to experiments upon living animals, the results of which I am desirous of making known, as they appear to me to throw light upon some of the questions at issue.

In experiments of this kind it is desirable, as well for insuring the means of accurate observation, as for the sake of humanity, to diminish, as much as possible, the sufferings of the animal. This can be accomplished, in many instances, by the production of artificial respiration, the animal having been previously deprived of sensation without shedding of its blood; but the employment of this method, as will be afterwards seen, causes the movements of the heart to terminate in a peculiar

manner, and is, therefore, not adapted for all the purposes of observation.

In cold-blooded animals, whose low sensibility renders them fitting subjects for experiment, the structure of the heart and the mode of circulation differ so much from those of the warm-blooded, that observations made on the former class of animals, and applied to explain the functions of the heart in the latter, would lead, in many respects, to erroneous conclusions.

In those cases, in which the employment of artificial respiration is not expedient, I have found much advantage in using very young animals, of the warm-blooded classes, for experiment. It appears to me that, in the earlier periods of life, the relation which exists, in the animal economy, between the central parts of the nervous system, and the organs in connexion with them, prevails less strongly than at a more advanced age; partly, I suppose, because the habit of co-operation in their functions has been but lately established; but chiefly because the central parts of the nervous system are as yet in a state of imperfect formation.

In very young warm-blooded animals, as well as in the inferior classes, the different organs have a comparatively independent existence; and as their functions are performed with considerable tranquillity under the infliction of severe injury to the individual, they also retain their vitality long after their separation from the rest of the system. From the same causes very young animals appear to suffer less pain, during experiment, than those of greater age.

By the employment of these different methods, the experimenter is enabled, in some degree, to combine, in his observations, the complicated functions of the heart of warm-blooded animals, with its tenacity of life, and tranquillity of motion, in those of simple structure.

EXPERIMENT 1.—In a dog, three days old, placed upon its back, the front of the thorax having been removed, the motions of the heart were perceptible; and on cutting longitudinally

through the pericardium, the heart immediately freed itself from that membrane, and pushing its apex forwards and upwards, with a good deal of force, exposed to view the front and part of the hinder surface of the ventricles. The motions of the heart having become, in a few seconds, tolerably steady, I observed the appendix of the left auricle become slightly swollen, and then, suddenly changing its figure, sink with a rapid motion, assuming a contracted form. Immediately upon this the ventricles became swollen, particularly in their middle part, which appeared as if it contained a globular body, and were a little shortened. Their apex seemed to be slightly twisted from right to left, and was elevated and pushed forwards, so that the front surface of the ventricles, between their apex and middle part, instead of presenting a convex form, became slightly concave. The ventricles, having remained in this state for a short time, suddenly sank down, becoming broader, flatter, and longer than they had been the instant before, and presenting, on their front surface, an uniform convexity. A pause now took place, terminated by a second swelling of the appendix of the auricle, which was followed by a succession of motions similar to those just described. When I had ascertained, by a sufficient inspection of the beating heart, that such was the constant succession of visible motions, I proceeded to determine the tangible qualities of the parts in their different states. Upon applying my finger to the front surface of the ventricles, I found that, when they assumed the swollen appearance, they became hard, and impinged with considerable force against the finger. When the swollen appearance ceased, and they became flatter and broader, the sensation conveyed by the finger was that of softness and flaccidity. The appendix of the auricle, when swollen, felt soft, and when contracted, hard; but neither of these sensations was produced by the appendix in as great degree as by the ventricles. I now cut off nearly the half of the ventricles by a section at right angles to the axis of the heart, when but little blood flowed out, the animal

having lost much during the preceding parts of the experiment. The portion of the ventricles which remained attached to the auricles, still continued its motions; and I observed, that, at each appearance of swelling in the ventricles, the section of their cavities was abridged, and the internal surfaces of each cavity were brought into closer contact, with the exception of about half a line's depth of those of the left ventricle, which seemed to gape a little during the swollen state. In the flaccid state, the internal surfaces of the ventricles did not separate from each other, but lay in contact, without the appearance of being firmly applied. The surface of the section presented the following changes:—When the ventricles became firm, its outer edge sank towards the base of the ventricles, while the edge, coinciding with the inner lining of the left ventricle, seemed to retain its distance from that base; and the points of the cut surface between these edges sank down towards the base, in the greater degree, as they were situated nearer the outside of the section: so that the surface of the section presented a conical form during the firm state of the ventricles. In the flaccid state this surface became plane, those points which had approached the base of the ventricles in the former state, having regained their distance from it in the latter.

EXPERIMENT 2.—In a dog of the same age as the former, the heart having been exposed, and its motions become steady, a puncture was made in the right ventricle, communicating with its cavity, and it was observed, that when the ventricles assumed the hardened state, a jet of blood was thrown with force through the puncture, which continued as long as the hardened state remained, and ceased immediately before the flaccid state of the ventricles ensued. A puncture was now made in the pulmonary artery, within less than a quarter of an inch from the ventricle, through which a continuous stream of blood shot forth, alternately stronger and weaker; its time of strength coinciding with the duration of the jet from the ventricle, and its feebleness, with the flaccid state of that part.

A ligature was then tied round the auricles, at their junction with the base of the ventricles, so as to prevent the passage of blood ; and in this state the motions of the heart were observed. The ventricles continued for some time to present the succession of changes which has been already described, becoming alternately globular and flattened, hard and soft, but their power of motion soon became much impaired. The motions of the auricles consisted of a flutter, with irregular attempts at contraction ; the vitality of the heart having been manifestly injured by the violence of the ligature. The venæ cavæ, aorta, and pulmonary vessels were now cut through ; and the heart, separated from the pericardium, was thrown into a vessel of tepid water, in which the alternate motions of the ventricles continued for a short time with increased power ; and at each swelling, a minute stream of water tinged with blood, was seen to proceed from the puncture in the right ventricle. These motions gradually ceased, the ventricles remaining in the swollen state : and the heart having been allowed to become cold in the water, was taken out and cut transversely through the middle of the ventricles, whose cavities were found to be closed by the contact of their opposite sides, the septum projecting apparently into the right ventricle, which seemed as if lapped round it.

EXPERIMENT 3.—Artificial respiration having been established in a rabbit which had been strangled, and the heart having been exposed by cutting through the upper seven ribs on each side near their cartilages, and turning towards the neck the front of the thorax, the following observations were made. The finger, applied successively to the front, back, and each side of the ventricles, conveyed the sensation of hardness and impulse, when the ventricles assumed the globular form ; and of softness and flaccidity when they became flattened and broad. The end of a probe, laid on the front surface of the ventricles, was raised nearly a quarter of an inch during the former

of these states, and sank, causing a depression on the surface of the ventricles during the latter. The probe was more elevated when placed on the middle point of the ventricles, or on the front of the apex, than when placed elsewhere. The right lung being held aside, so as to admit of the right auricle being seen, this was observed to swell during the continuance of the ventricles in their hardened state, and to diminish its size from the instant in which their flaccidity commenced. The active contraction of the auricle commenced a moment after slight diminution in its size had taken place, and began in that part which is contiguous to the *venæ cavæ*, extending itself gradually but rapidly over the whole surface, until it reached the appendix, which part became slightly swollen, as the portion of the auricle adjacent to it became contracted. The swelling of the appendix was followed immediately by its sinking and diminution in size, to which instantaneously succeeded the movement of the ventricles, which has been before described. The contraction of the appendix was always preceded by that of the rest of the auricle, and was much more sudden and distinguishable than that of any other part.

The heart continued to beat in this subject for an hour, when its motions gradually terminated, the different parts seeming to lose their power of moving nearly all at the same period; and when all motion had ceased, both auricles and both ventricles remained distended, soft, and full of blood. The heart, separated from the body, was thrown into tepid water, where it remained soft and without motion, having lost the power of contracting itself.

EXPERIMENT 4.—A rabbit having been strangled, the heart was exposed while still beating. In ten minutes the left ventricle had ceased to move, and had contracted itself firmly. In two minutes afterwards, all motion was at an end in the left auricle, which was also contracted. The right ventricle continued its movements for forty-five minutes, and during its hardened state the apex of the heart was drawn a little to the

right side. The motions of the ventricle became gradually feebler for the last twenty minutes, and when it ceased to move it remained distended with blood. The right auricle continued its movements for an hour and three quarters, its contractions becoming slower and more imperfect during the last hour. For the last twenty minutes its contraction proceeded very slowly, and with a motion almost vermicular, over its surface, always commencing at the part contiguous to the venæ cavæ, and ending at the appendix; and, three or four times, the contraction, having reached as far as the beginning of the appendix, ceased there, and the appendix itself did not contract until after a second contraction of the other parts of the auricle. The right auricle, when its movements had terminated, remained full of blood; but the heart having been placed in tepid water, the right ventricle and auricle gradually expelled their contents, assuming, as those of the left side had done, a firm and contracted state.

Before proceeding to the conclusions to which these experiments lead, I wish to notice some circumstances of the anatomy of the heart, which appear to me to explain certain of its motions.

The muscular fibres of the auricles are not in any part continuous with those of the ventricles, but are connected to them, either by the fibro-cartilaginous bodies, which are situated at the origins of the aorta and pulmonary artery, or by a mass of tough, cellular and fatty substance. The contractions of the fibres of the auricles, are, therefore, quite independent of those of the ventricles. The auricles, considered apart from their appendices, are muscular bags, whose surfaces are tolerably uniform, and the thickness of whose sides bears but a small ratio to the extent of their cavities. Their muscular fibres are arranged, so as by their contraction, some, towards the base of the ventricles, and others towards the septum of the auricles, to diminish the cavity of each auricle in these directions. Those fibres of each auricle, which reach the septum, divide there into two sets, one,

which passes onwards, being continuous with the fibres of the neighbouring auricle; the other, traversing the septum, and intermingling there with corresponding fibres from the auricle adjoining. These fibres, having traversed the septum, which is formed chiefly by them, are thus distributed; those which had come from the front of the right auricle, contribute to form the back part of the left; and those from the front of the left, to form the back of the right. Thus, there are some fibres which surround both auricles, passing continuously over their surfaces, and others, which encompass them in the form of the figure 8, the septum being the place of their intersection and incorporation. Consequently, while both auricles possess the power of moving, their motions are simultaneous, and never alternate. Around the connexion of the right auricle with the *venæ cavæ*, there are bands of muscular fibres, somewhat like sphincters. Here commences the auricular systole; and probably the contraction of these bands, together with the simultaneous swelling of the muscular part, called the “tubercle of Lower,” may so diminish the passage between the *venæ cavæ* and the auricle, as to render it more easy for the blood to escape into the ventricle, than to pass towards the veins, during the auricular contraction.

The structure of the parts called the appendices, is a remnant of the formation which prevails in the heart of some of the lower classes of animals, consisting of a number of muscular bundles, which pass from numerous points of the internal surface to others, at various distances, and serve, by their contraction, to bring these points nearer to each other, and thus abridge the extent of the cavity. In reptiles and fishes, for instance, these muscular bundles are found in great numbers in all parts of the auricle and ventricle, and, in some species, in the expansion at the origin of the aorta. In these animals, the ratio which the thickness of the sides of the auricle and ventricle bears to the extent of their cavities, is much less than in the hearts of mammalia and birds: the degree of their expansion and contraction

is much greater, and the quantity of blood received and transmitted at each diastole and systole, is proportionally large, which compensates for the slowness and infrequency of the heart's movements.

The presence of numerous columnæ carneæ is, therefore, necessary in the heart of these animals, as such a structure is capable of diminishing more effectually the capacity of the organ in which it is situated, than could be done by the contraction of a simple muscular bag. In the higher classes of mammalia, and in birds, the actions of the heart are more rapid, and the quantity of blood sent periodically into circulation, is proportionally small. The sinuses of the auricles, particularly of that on the left side, contract but little during their systole; and, not requiring the presence of columnæ carneæ, are smooth on their internal surface, except in the right auricle, in which are found a few of these fleshy bundles; and which, as it is analogous, in its office, to the single auricle of the simple heart, preserves, when forming a part of this organ in its most complicated state, a remnant of its original structure.

The appendices, in the extent of their motions, as well as in their internal arrangement, resemble the auricle of the simple heart, and ought to be regarded, in the human subject, as rudimentary formations. Their office is of little importance to the circulation; and they may, with propriety, be classed amongst the complementary parts.

It may be observed, that not only throughout the different classes of animals, but in the different parts of the heart in each, the smoothness of its internal surfaces, is in relation to the rank of the functions to which that organ, or its parts, are subservient. In birds, in whom the rapidity of the circulation, and the natural elevation of temperature, are remarkable, the columnæ carneæ are less numerous than in the highest order of mammalia: and in the more perfect classes of animals, the left auricle and ventricle, whose sympathies are with the respiratory organs, and whose vitality is of a corresponding character, surpass, in the

smoothness of their internal surfaces, the analogous parts on the right side.

The muscular fibres of the ventricles are arranged in a very complicated manner, but so as to produce, by their contraction, a diminution of the ventricular cavities on all sides. The external direction of the greater number of these fibres is from right to left, and from above downwards; those which encompass the ventricles, near their base, passing more transversely, and those which proceed nearer the apex, forming a more acute angle with the axis of the ventricles. On their passage towards the apex, from the base, whence they are all seen to proceed, each fibre sinks more deeply into the substance of the heart, and makes its way under those which are contiguous to it upon its upper side; and having proceeded downwards a certain way, begins to turn again, upwards, towards the base. In its course still continuing to sink deeper into the substance of the ventricles, it is found, on its return to, or near the base, to form a part of their internal structure; and in many instances, fibres which form a part of the external substance of the ventricles, are continuous at the base, with others belonging to the inside.

Thus, each fibre may be regarded as a muscular band, which, proceeding from a point in the base, in a direction inclined more or less towards the apex, returns again to the base, embracing in a spiral form the cavity of one, or those of both ventricles; forming, at its commencement, a part of the external substance—at the termination of its downward course, a part of the substance midway between the outer and inner surfaces—and, at its return to, or near the base, a part of the internal substance of the ventricle. The course of the fibres, discernible upon the outside surface of either ventricle, accordingly forms an angle with the direction of those to be seen upon its inside. This description is not accurately true of all the fibres of the ventricles, but is applicable to, by far, the greater part of them.

The columnæ carneæ of the ventricles, are more numerous than those of the auricles, in accordance with the more effectual

diminution, during systole, of the cavities in the former; and are most numerous in the right ventricle.

Their fibres are, some of them, continuous with the ascending fibres in their course towards the base, and others arise, like offsets, from fibres passing in different directions. The columns which are attached to the auriculo-ventricular valves, and named 'musculi papillares,' have the direction of their fibres nearly parallel to the axis of the ventricles; and are situated, with their upper and lower extremities at about equal distances, the former from the base, the latter from the apex; occupying, therefore, the middle portion of the ventricles. In the septum, many fibres from both ventricles decussate and intermingle, and passing out, become incorporated, those from each ventricle, with the substance of the other, thus producing simultaneous, and preventing alternate contraction of the ventricles.

In the human heart, and in those of the higher classes of animals, the shape of the ventricles is nearly that of an oblique cone, the base of which is applied to the auricles, and the longest side placed in front; while in fishes and reptiles the distances between the apex and the base, upon the anterior and posterior surfaces, are more nearly equal, and, in some of these animals, quite so. By unravelling the fibres in hearts prepared by boiling, after the manner of Lower, and Senac, a valuable addition to which method I have found in the previous immersion of the heart for several days in strong pickle, I have been enabled to measure the lengths of the anterior and posterior fibres of the ventricles; and I have found that in the human heart, in which, I believe, the obliquity of form is most remarkable, the length of the fibres, by whose contraction the apex is made to approach the base in front, exceeds the length of those which perform a similar office on the back part, in the ratio of five to three.

The explanation, which the above experiments and anato-

mical facts seem to afford of the movements of the heart, is as follows :—

When the ventricles assume their hard and swollen state, they are contracting upon their contents, and sending their blood into their respective arteries. This is proved by the jet from the punctured ventricle, coincident with its hardened state, and corresponding to the increased strength of the jet from the punctured artery, as observed in the second experiment. The swelling and shortening of the ventricles are caused by the contraction of their fibres, in the same manner as in any other muscle, as was first observed by Harvey. The reason why the ventricles are apparently increased, and the auricles diminished in size, during their respective contractions, is that, in the former, the quantity of their muscular substance bears a large ratio to their capacity, while, in the latter, this ratio is small. Accordingly, in the auricles, the diminution of their capacity, when they are contracting, exceeds the increase of bulk caused by the thickening of their fibres ; in the ventricles, on the contrary, the increased thickness of their fibres exceeds the diminution of capacity caused by their contraction.

During the contraction of the ventricles, the auriculo-ventricular valves are driven upwards towards the auricles by the pressure of the blood beneath ; and in this state may be likened to sails distended by the wind, the valve resembling the canvass—the *cordæ tendineæ*, the rope called the ‘sheet’—and the *musculi papillares*, the arm of the sailor. In the same degree as the contraction of the ventricles urges the blood against these valves, do the *musculi papillares*, partaking of the same contraction, restrain their motions. While the ventricles remain in their contracted state no blood can pass into them from the auricles ; and, therefore, the swelling of the auricles increases during the whole of the ventricular contraction, being caused by the constant flow of blood from the venous trunks. At the instant in which the contraction of the ventricles is at an end, these muscles, being no longer in action, become perfectly soft

and yielding, and fall down into that shape which naturally belongs to them in this condition. The cessation of their contraction removes the obstacle to the flow of blood into their cavities, from the auricles ; and these, being now slightly distended by the quantity of blood which they have received during the ventricular contraction, are thus relieved of a part of their contents. The blood, in the first instance, appears to pass from the auricles, without any muscular exertion on their part, in obedience to the law by which fluids seek their level ; and, as its flow is coincident with the cessation of the ventricular contraction, it is manifest that when the ventricles present themselves to our view in their softened state, they always contain some blood.

This observation, as to the manner in which the ventricles receive the first portion of their blood, has been made also by Dr. Hope, with the exception that he is disposed to admit a power of suction, or of elastic dilatation in the ventricles. A disposition to ascribe to the ventricles a power of dilatation prevails amongst physiologists, although such an opinion is not, as far as I am aware, warranted by experiment, nor founded upon analogy. Bichat, indeed, states, that if the heart of a large animal be grasped within the chest, while beating, the fingers will be forced asunder by the dilating power of the ventricles. But it is easy to perceive, that in this instance, Bichat mistook the systole of the ventricles for their diastole, an error, to which, their swollen state, and apparent increase of magnitude while expelling their blood, might easily lead.

The soft and flaccid state, in which the ventricles are found, in their diastole, is inconsistent with the supposition of a dilating power ; as is also the appearance which the cavities present, when the ventricles have been cut through, as detailed in the first experiment in this paper. Such a power is not necessary—for the muscularity of the auricles is sufficient to drive the blood into the ventricles, and is employed for that purpose ; and if a

dilating power, of an elastic kind, existed, it would be injurious, so far as interfering with the contractions of the ventricles.

Analogy does not sanction this opinion, for there is no instance in which muscular fibre, situated in other organs, possesses such a power. The spontaneous elongation of muscular fibres, after contraction, is inconsiderable, and without force; and is incapable of dilating a cavity of which these fibres may form the sides. The return of a muscle, which has acted, to a state fitting it for a renewal of its action, does not imply a power of elongation residing in the muscular fibre: it requires merely that the muscle should become flaccid and yielding, in which state its fibres may be lengthened by the action of any extraneous power, as that of an antagonist muscle, an elastic ligament, the passage of a fluid, or the force of gravity. The cellular, and other tissues, which enter into the composition of muscles, give them, no doubt, a certain degree of consistence, by which their shape, in all circumstances, is modified; but when muscles are deprived of external support, their form, when they are in the relaxed state, is much influenced by extraneous agents. Thus, when the ventricles are in their state of relaxation, a probe, laid upon their surface, sinks, causing a depression: if it be placed beneath them, so as to sustain their weight, their apex, and parts adjoining, droop considerably. When the beating heart, as described in the second experiment, was placed in tepid water, the ventricles, in their relaxed state, assumed a somewhat expanded form, as a soft anatomical preparation will do in similar circumstances, and thus favoured the admission, through the puncture, of a small quantity of water, which was expelled again by the succeeding contraction. From all these considerations, I conclude that the passage of blood into the ventricles is not induced by any dilatation, or power of suction with which they are endowed.

It may be stated, generally, that the heart does not seem to possess any kind of movement not to be found in the muscular structure in other places. Its composition, although intricate,

resembles that of many other muscular organs not influenced by the will : the alternate motions of the auricles and ventricles have a parallel in those of the gizzard in birds, in which the grinding muscles act alternately with others, which submit the food to their operation ; and also in those of the diaphragm and abdominal muscles : and the vermicular motion of the auricles resembles that of the long-shaped heart of insects, which, again, is analogous to the successive movements of an intestinal tube.

The contraction of the auricles commences just as the ventricles have received the flow of blood already described, and beginning in the neighbourhood of the venæ cavæ and pulmonary veins, ends in the appendices, the nature of whose contraction has been before adverted to. The quantity of blood which passes at each pulsation into the ventricles is small ; and this circumstance, together with the manner in which they receive their first portion of blood, accounts for the trifling increase of size which they are seen to acquire between the time of their assuming the softened state, and the commencement of their next contraction.

The contraction of the appendices, being later than that of the rest of the auricles, immediately precedes the movement of the ventricles ; and this circumstance has led to the opinion, that the ventricles are induced to act by the “ stimulus of distention.” But experiments shew, that they will continue their periodic movements after they have been separated from the rest of the heart, and that even when cut in pieces, each part will, for a time, alternately contract and relax its fibres ; and the same thing occurs in the auricles. We must look to another cause than the “ stimulus of distention,” for the periodic movements of the heart ; and it is to be found in what has been well termed the “ organic instinct,” a disposition in parts to perform certain functions, depending upon their organization. It is true that the heart, when removed from the body, or when respiration has been suspended, will soon cease its motions and lose its vitality ; but in this, it only exemplifies a general pro-

position, that the continuance of organic functions requires the existence of those relations with which they are naturally associated. The heart possesses within itself the disposition and power to perform certain actions; but if it be deprived of its ordinary relations to a nervous system, a circulating fluid, and a respiratory organ, it is incapable of long continuing those actions. It may be observed that, generally, the less numerous and complicated are the relations which exist between the heart or its parts, and other organs in animals, the less does the suspension of these relations interfere with its functions. In many animals, whose nervous system is feebly developed, and whose heart transmits only venous blood, this organ is known to preserve its vitality many hours after the death of the individual: and in the third and fourth experiments in this paper, it was found, that when respiration was artificially sustained, the left side of the heart, which has an immediate relation to the respiratory organ, was enabled to continue its movements for an hour; whereas, in the absence of respiration, its motions ceased in twelve minutes. In the latter experiment, the right side of the heart, which is related to the body generally, but not so directly to the respiratory organ, maintained its motions, the ventricle for forty-five minutes, the auricle for an hour and three quarters, after respiration had been suspended.

The organs of circulation are so constructed, that the motions of different parts have a mutual relation. The ventricles, in their natural state, are not disposed to contract before they have received a proper quantity of blood; nor do the veins incline to send forward their contents more rapidly than is suitable to the disposition of the auricles, with the periodic motions of which the movements of the ventricles alternate spontaneously. This mutual adaptation of functions throughout the general system, constitutes the healthy state.

The form which the ventricles assume, during their systole, may be explained as follows:—All their fibres being shortened, are proportionally increased in thickness; and the *musculi papillares*, which form considerable masses in the left ventricle,

and occupy the middle part of both, contribute by their lateral expansion to the globular form which has been noticed in that part, and which is caused also by the greater thickness there than elsewhere, of the sides of the ventricles.

It is a law of muscular action, that fibres are shortened during their contraction, in proportion to their length when relaxed and extended. For instance, if a fibre an inch long lose by contraction one-fourth of its length, or one quarter of an inch, a fibre two inches long will lose half an inch, by a contraction of equal intensity. I have shewn that the fibres of the ventricles, whose contraction causes the apex to approach the base, are considerably longer on the front than on the back part; the former, consequently, are more shortened during their contraction than the latter. The apex then, when approaching the base during the systole, does not move in the axis of the ventricles, but is drawn more to the side of the longer fibres, that is, towards the front, and contributes by this movement to produce what Hunter called the 'tilting' of the heart.

This conclusion is strengthened by the observation, that the forward motion of the apex occurs in a very slight degree, where the ventricles have little obliquity of form. In the heart of the frog for instance, where the ventricle is nearly of equal lengths before and behind, the 'tilting' of the apex is scarcely discernible. I have already noticed that the obliquity of form is greater, as far as I have been able to ascertain, in the human heart, than in that of any other animal.

It was observed in the fourth experiment, that after the left ventricle had ceased its motions, the apex of the heart was drawn a little to the right side, at each contraction of the right ventricle. This fact illustrates the preceding view of the motions of the ventricles, as it shews that, in any circumstances, the apex will be drawn to the side on which the contraction of the fibres is greatest.

The depression observed on the front surface of the ventricles, between their apex and middle, is, in part, relative to the globular form of the latter, and the forward position of the

apex, being situated between these prominent objects : also, its position corresponds to that part of the left ventricle where its sides are thin, and the muscoli pectinati are most abundant, and in which, consequently, the diminution of its volume during contraction is most perceptible.

The apparent twisting of the apex observed towards the termination of the systole, is caused by slight depressions in the course of some of the long fibres, depending probably upon the intensity of their contraction, and which, as the fibres have a spiral course from right to left, give to the lower part of the ventricles the appearance of being twisted in that direction. I have observed that in the systole the contraction arrives at its greatest degree a little later in the apex, than in the body of the ventricles, presenting in this respect, a resemblance between the apex and the appendix of the auricle, in addition to that derived from the similarity of their internal structure.

The changes of form in the surface of the section, as detailed in the first experiment, are to be explained by the greater shortening of the fibres at the outside of the section, than of those situated towards its middle, the former being the longer. During the systole, therefore, the former part of the section was drawn more towards the base of the ventricles than the latter, and in this way a conical form was produced. When the fibres of the ventricles relaxed, the plane surface was re-established.

It was found in the third experiment, that the finger applied to any part of the ventricles, conveyed, when their systole took place, the sensation of hardness and impulse. This was caused by the sudden change of the soft and inactive muscle, into one which was firm and contracted. There can be no doubt, that if a substance of sufficient density were extended from the ventricles to any part of the sides of the thorax, an impulse would be felt at that part during the systole ; but the consistence of the lungs and cellular substance, interposed between the ventricles and the greater part of the chest, hinders this impulse from being felt, except in front of the heart.

There, in ordinary cases, the pericardium, and a little cellular substance, alone separate the ventricles from the side of the chest, against which their apex is pressed during their systole, partly by a forward movement of the body of the ventricles, caused by their globular protuberance behind, but chiefly by the peculiar motion of the apex already described.

In a person lying on the back, and a little on the right side, the beating of the heart is not perceptible, because that organ, having sunk into the chest, in this position of the body, is removed from contact with the side; and in the upright posture, if a full inspiration be made, the pulsations are felt indistinctly, as the inflated edges of the lungs interpose in front, between the heart and the side of the chest. The beating of the heart is most distinctly felt in a person lying on the left side, and partly on the face, in which posture, the sensation imparted to the hand placed over the lower part of the heart, is that of a prolonged pressure, with a slight upward movement, increasing in intensity during its continuance, and ceasing suddenly. The duration of the pressure corresponds to that of the ventricular systole, and its sudden cessation marks the collapse of the ventricles at the commencement of the diastole.

The impulse of the heart against the side has been otherwise explained by some writers; and on this subject, an opinion, which Harvey states to have been held by some in his time, has been lately revived. According to this view, the impulse coincides with the diastole of the ventricles, and is caused by the rush of blood into their cavities, and their coincident distention, during the auricular systole. But, when it is considered that the ventricles, during their diastole, are in a soft and yielding state, and that, immediately on its commencement, they retreat from the front of the chest, and, as Dr. Hope also has observed, how trifling is the contraction of the auricle, and how small the quantity of blood driven by it into the ventricle, little doubt will remain that this opinion is incorrect.

An additional argument is derived from the fact, ascertained

by experiment, that a strong impulse *is* caused in front by the ventricles during their systole, and that the position of the heart is such, that this impulse must be communicated to the side of the chest. Therefore, as a single impulse is felt outside of the chest, during the succession of motions which constitute a 'beat,' and as the ventricles, in their systole, communicate one inside, during the same period, it follows that these two are coincident.

The opinion that the impulse is caused by the diastole, is supported, at first view, by the examination of the frog's heart, in which the ventricle approaches nearest to the front of the chest when full of blood, immediately before its systole commences, and retires from it during its contraction; but I have already pointed out, that in the heart of reptiles, the expansion of the cavities, and the quantity of blood which they receive, far exceed those in the heart of warm-blooded animals, in which the enlargement of the ventricles, when receiving their blood, is scarcely perceptible. In the heart of the frog, also, the ventricle has almost no tilting of the apex, nor any globular swelling in the middle; but, when expelling its blood, is diminished on all sides, preserving, during the whole of its contraction, a similarity of form. These peculiarities are referable to the structure of the reptile's heart, to which I have before directed attention, and are likely to mislead, when inconsiderately applied to explain the movements of the warm-blooded heart.

A supposition that the pulsations in all the arteries are synchronous with each other, and with the ventricular systole, also leads to the opinion that the beat of the heart is caused by the ventricular diastole. For observation soon ascertains that the pulse, at a distance from the heart, is later than the impulse felt at the chest; and it becomes necessary to ascribe the impulse to a movement of the ventricles preceding their systole. Their diastole is the only movement so circumstanced, and is thus liable to be mistaken for the cause of the impulse.

The pulsations of the arteries, at different distances from

the heart, are not, however, synchronous with each other, nor with the systole of the ventricles. If the beat of the heart, and the pulse in the radial artery, be felt at the same time, an interval will be perceived between them; and if the anterior tibial artery be substituted for the radial, the interval will be greater. Repeated observations of this kind will teach, that the heart's beat precedes the pulse in different parts of the body, by intervals of time proportioned to the distances from the heart of the respective parts. In the subclavian artery, the interval is barely perceptible: in the arteries of the extremities it is most easily felt.

This succession in the pulse is to be explained by the elasticity of the aorta and its subdivisions. When the ventricle contracts, it sends into the aorta, already full, and in a state of mean dilatation, a quantity of blood, which, if the aorta were a rigid tube, would drive forward, simultaneously, the whole of the the blood contained in that vessel. But while a part of the momentum of the injected blood is expended in the longitudinal direction, the remainder distends, laterally, the portion of the aorta nearest to the heart. This portion, re-acting, by its elasticity, on the contained blood, whose lateral impulse has been expended, compels it, as it cannot return to the heart, to make way for itself onwards. In doing so, as its progress is opposed by the mass of blood immediately beyond it, a lateral impulse is again communicated, and produces a dilatation in a second portion of the aorta, which is followed by a second elastic reaction, driving still further the mass of blood.

Thus, there is a wave of dilatation, commencing with each ventricular contraction, and passing with great rapidity along the aorta and its subdivisions, to their extreme branches; and if a hundred fingers were placed at intervals along the course of an artery, so many distinct pulses would be felt in succession after each beat of the heart.

The velocity of the blood in the arteries, although great, is not nearly equal to that with which the pulse travels along. For

as the arteries are always full of blood, and the quantity which passes out of them, in the interval between two pulsations, is equal to that received by them in the same time, it is clear that the portion, driven in by one ventricular contraction, cannot pass through the whole arterial tube, and out into the veins, before a second contraction shall have taken place: yet the pulse passes along this extent in even a shorter time.

During the passage of each wave of dilatation from the heart to the extreme branches, a quantity of blood, nearly equal to that sent in by the ventricular contraction, passes forth from the arteries, being subtracted from the part of their contents nearest to their termination. The portion driven in by the ventricle, while its impulse is communicated along the arteries by their elastic power, remains itself behind, and mingling with the blood already in the arteries, is driven gradually onwards, passing in its turn into the last arterial branches, and so into the veins.

The successive character of the pulse affords a convincing proof that the beat of the heart is caused by the systole of the ventricles. For, as the intervals of time, between the beat, and the pulse in different parts, vary as the distances of these parts from the heart, when the distance becomes evanescent, the interval also will vanish. Consequently, at the commencement of the aorta, the pulse will be synchronous with the beat of the heart; but the pulse, at the commencement of the aorta, is synchronous with the systole of the ventricle, because of the nearness of these parts; therefore, the beat of the heart is synchronous with the ventricular systole.

The sounds of the heart have engaged attention since the employment of the stethoscope in the investigation of disease, and have been described by Laennec as the first, or long, and the second, or short sound. There can be no doubt that, although Laennec was wrong in ascribing the first sound to the contraction of the muscles of the ventricles, he is right in connecting it with the ventricular systole, as these two

correspond in duration, and the former is satisfactorily accounted for by the rush of blood into the great vessels which the latter produces. But in ascribing the second sound to the contraction of the auricles, he has fallen into an extraordinary error, as the second sound occurs immediately after the first one, whereas the auricular systole precedes the ventricular, which is followed by an interval of rest to all the parts of the heart. This mistake has been noticed by different writers since Laennec's time, who have rejected his explanation, and substituted others. The second sound has been ascribed, by one writer, to the contact of the internal surfaces of the ventricles, at the end of their systole, and by another, to the sudden ingress of blood which they experience immediately after.

A comparison of the effects which such causes can be supposed capable of producing, with the abrupt, and valve-like character of the second sound, has led me to seek its cause in another quarter ; and I have little doubt that it is to be found in the state, about to be described, of the semilunar valves at the commencement of the ventricular diastole.

At each contraction of the ventricles a quantity of blood is driven into the aorta, and pulmonary artery, which accommodate this addition to their contents by a lateral expansion of their parts nearest the heart. When the systole is at an end, the elasticity of these vessels, reacting upon the contained blood, drives it, in part, towards the heart, into which its entrance is prevented by the sudden shutting of the semilunar valves. A shock is thus created, which is heard by an ear placed over the region of the heart.

A consideration of the mechanism of the semilunar valves, of the force with which the ventricles send their blood into the great vessels, of the amount of elastic power which these possess, and of the distended state in which the sinuses of Valsalva are often found, renders it manifest that a shock, such as I have described, must be produced on the occasions to which I have referred it: and as this shock and the second sound occur at the same time, and the character of the one is such

as the other is evidently fitted to produce; it seems a most reasonable supposition, that the second sound is caused in the manner I have described.*

The preceding account of the heart's functions coincides, in many points, with the results of previous inquiries: at the same time, those who are conversant with the subject, will perceive that many of the facts and explanations are new. The general view which I have given of the movements of the heart has no claim to novelty, being the same which was made known by Harvey, in his book "*De Motu Cordis*," and to which no important addition has been since made. Probably the experiments and explanations here set forth, may lead some, whose minds have been unsettled by opinions recently promulgated, to resume their faith in the doctrines of that sagacious observer.

ART. VI.—*Explanatory Observations on Tracheotomy.* By J. MURRAY, M. D., Edinburgh and T. C. D.; Member of the Royal College of Surgeons; Member Extraordinary of the Royal Physical Society of Edinburgh; Member of the Association of Physicians and Surgeons of Dublin; and Inspector of Anatomy for this City.

SIR,

In one of your early numbers, Mr. Carmichael published the result of several cases of tracheotomy, the latest of which operations, in 1831, was performed in a very improved manner, when compared with the account given in the "*Dublin Transactions*," of the mode followed in 1824. Soon after the appearance of his paper in your Journal, his attention

* Since the above was written, I have seen in the *Lancet* of 12th Jan. 1833, a similar explanation of the second sound. This coincidence strengthens me in the view which I have taken, and which, together with the other opinions contained in this paper, was communicated by me to the anatomical class of the University, during the demonstrations given in December, 1832.

was directed by the London Medical and Surgical Journal, to the fact, that the improved method he adopted, was that published by me in my *Thesis*, written at Edinburgh in 1827, and printed in 1829.

A pupil of mine, in the same Journal, called to his remembrance other circumstances relative to my being the first author who had proposed or detailed the new mode of operating. Mr. Carmichael, with that candour and liberality natural to enlightened minds, immediately assured me, "that he now distinctly recollected, it was from my book he had taken the idea of fixing the anterior wall of the trachea on a hook, drawing it forwards, and removing the desired portion in the manner I had recommended; and further, that he would take the earliest occasion of acknowledging this fact, which had then escaped his memory." I was quite satisfied with this candid declaration, more particularly as he had written me a letter five years before, strongly expressing his opinion of the importance of my method, particularly when operating on children, or by candle light, and his determination to act upon the principle the first opportunity.

Though a professional man naturally desires to be awarded the merit which any decided improvement in surgery may entitle him, yet being latterly more engaged in a different department, I did not consider it necessary to vindicate my right, being well aware, that Mr. Charmichael would do me ample justice in some future paper.

Certain other gentlemen however, have not been so prompt to follow his example. One large class of students in this city, has been greatly misled on the subject, by the *lecturer*; to another class, the new method of operating was described almost verbatim, from my work, marked care being taken to make no allusion to either it or the author.

This being the case, I now request you will re-publish the mode of operating originally recommended by me. This will enable your readers to compare it with those of other authors, and

form their own conclusions. It will also assist in promulgating a plan, which should certainly be more generally known.

My attention was early attracted to the anatomy and diseases of the neck, when qualifying for the army medical department, by a very minute examination, before the Irish Royal College of Surgeons, in October, 1808. Since that period I have had abundant proofs, how dangerous is the process laid down by all former surgical writers, and how injurious the consequences of deep incisions, made by plunging sharp instruments into the wind-pipe, or excising a piece, by successively clipping each angle with a scissors, or slicing out flaps and diagonal corners, in a dark and bleeding wound.

Whether other practitioners will adopt the preliminary part of the operation, of altogether removing a patch of the integuments, is not so material, though it is often replaced by granulations, sooner than is desirable to permit the part to heal up. At all events it clears away the fat, membranes, and skin, which embarrassed every step of former operations, leaves an exposed space for the intended opening, and prevents the subsequent swelling and closing up, which often rendered the aperture of the pipe useless.

The advantage of exposing the front of the trachea, and being able to scoop out the lozenge shaped piece, which you have drawn out *prominent* on the hook, can only be appreciated by those who have witnessed the risk of former proceedings, and the ease and safety of this process.

The same idea may have occurred to others, but the following is the first, and indeed only published directions on the new plan, printed in page 237 of my work on "TEMPERATURE, &c.," in the chapter treating of croup.

JAMES MURRAY, M. D.

Merrion Square, June, 1833.

"IF I were not already afraid that this little treatise seems threatened with the danger of touching too many topics, or

treating “*de omnibus rebus*,” I would say a few words regarding the operation here alluded to. The necessity of a new passage for the air, is, however, so important and urgent on sudden emergencies of choking or threatened strangulation, either from accidents or diseases, that I cannot resist impressing its advantages on the minds of my young surgical friends. There is more safety and facility in tracheotomy, than the parade and laboured descriptions of most authors would lead us to believe. It should be strongly urged, that thousands die for want of its early performance, for one who perishes on account of the operation.

“The method which I recommend is prompt, safe, and simple. It consists of two parts,—

“*First*—Lean the patient’s head *forward* to relax the skin on the fore part of the neck. About an inch below the thyroid gland, embrace, longitudinally, a piece of the integuments between the fore-finger and thumb of the left hand, and, with the right, cut out this oval piece of skin and subjacent fascia, at one sweep, down to the trachea.

“*Second*—You now lay *back* the patient’s head, to make the trachea protrude forward, and you have a space of the anterior part of the tube clean and bare, corresponding in size to that of the integuments you had pinched up and cut out, which should measure an inch down along the throat, by half an inch across, at the middle. You now introduce a hook, or a tenaculum, into the middle of the exposed part of the throat, between two of the rings; you fix it, and pull forward the centre of the trachea, and at one cut, you slice out the piece which the hook has fixed, and which should be more than *half* the diameter of a silver sixpence.

“This leaves an aperture which will not instantly close up like those having flaps and corners; the bleeding integuments being retracted some distance from the orifice, do not fill it with blood, and there is a ready admission for blowing in air, if required, or sucking out any viscid or membranous matter threatening strangulation.

“ The advantages of pulling forward the integument are, that you cut out an oval piece exactly the shape you wish, at one stroke of the scalpel, so as to leave the corresponding spot of the trachea clean and exposed.

“ That, when you have pinched up the integuments, you can feel the pulsation of an artery, which, by any deviation of the vessel from its ordinary course, might cross the part, and you can therefore avoid embracing it in the piece to be cut out.*

“ That, by drawing the skin, cellular membrane, and fascia, out as far as possible, the small thyroid vessels, which must be cut, are put upon the stretch so much, that after the piece is removed, they retract, so as to give no alarm or annoyance by bleeding.†

“ That, by drawing forward and steadily retaining the part to be cut on the hook, no start, spasm, coughing, or unsteadiness of the patient, can risk the knife touching the left subclavian vein below, the lobes of the thyroid gland above, either of the carotid arteries at the sides, or its point wounding the back of the trachea behind.‡

“ That, in this mode of operating, the integuments cannot be drawn over the new orifice, by any convulsive motion or spasms, as *Vigili* saw in the case of a soldier; that they are not in the way, either in introducing the pipe of bellows or a canula; and that they easily permit the sucking out of tough phlegm, or croupy membranes, when suffocating the patient. Moreover, the operation can be finished so instantly in this manner, that the most immediate chance for life is afforded.”

* *Desault* saw the carotid artery wounded in this operation, as formerly performed. *Mr. A. Burns* has a cast shewing an instance of the right carotid crossing the trachea two inches and a quarter above the top of the sternum. *Scarpa*, and others, describe cases of the *arteria innominata* running far up in front of the trachea, before the carotids diverged.

† *Van Swieten* describes the danger of blood flowing into the new opening.

‡ *Fabricius ab aquapendente* shews the injury resulting from touching the back of the trachea, even with a canula.

BIBLIOGRAPHIC NOTICES.

Notices concerning Works on the Practice of Physic, Surgery, Pathology, and Physiology, recently published in Germany.

(Continued from Vol. III. page 412.)

DOCTOR OPPENHEIM's other visits to harems were not always so agreeable as that just described; although this section of our author's work can scarcely be considered as strictly medical, yet the information it contains is so novel and so highly illustrative of Turkish manners, that I cannot resist the temptation of transcribing it:—

“The Pascha for several days in succession, required me to prescribe for a patient, whose name, sex, or age, he would not tell; and concerning whom I got no other information, than that the person complained of pain in the head and palpitations. I, of course, guessed that my patient was a female, but, nevertheless, for several days refused to prescribe, until told my patient's sex, age, appearance, &c. &c., alleging truly, that without being made acquainted with these particulars, my medicines might do more harm than good. My obstinancy extorted from the Pascha a confession, that she was a lady about thirty years of age, who had been ill nearly a year. Conjecturing that her ailment was hysterical, I prescribed nervous draughts, but finding she did not improve, I soon refused to send any more medicines. The credit I had obtained by the cure of Kiaja-Bey's wife at last prevailed, and the Pascha acknowledged that my patient was his own wife, and consented that I should visit her. She resided at a considerable distance, and when I arrived at the gate of the harem, I was kept waiting outside for at least quarter of an hour, in order that every thing might be arranged and properly concealed from observation before I entered. When the gate was opened, I was received by the matron of the harem, and conducted through the house to a door, when we again stopped; presently it was half opened, and two tall negresses wearing veils came out, and placed themselves one at each side of the door, which they again nearly closed, leaving space enough to admit one's arm. Through

this aperture a hand made its appearance, emaciated, and painted of various colours; the nails were stained bright yellow, while each finger, as far as the first joint, was painted green on the back, and black on its other side. I felt the pulse for some time, but the moment I withdrew my finger from the wrist, the hand and negresses vanished, and the door closed. I was now called on for my diagnosis, prognosis, and plan of treatment. It was in vain that I requested the matron to make me acquainted with other particulars of the case; her invariable answer was, thou hast felt the lady's pulse, and must now know all! At last, after a persevering system of interrogatories and cross-examination, I was enabled to elicit that the patient had a cough and expectoration, and above all, that she was blind! It was for this blindness that she sought advice, and it was this disease that I was expected to recognize by feeling the pulse! I now explained to the Pascha, the utter impossibility of curing the defect of vision, without previously examining her eyes. He obstinately refused permission to do this, but still insisted upon my giving some medicines. With this request I complied at last, and sent powders composed of white sugar, &c. I did not fare much better in a visit I soon after made to a third harem. I was received with the customary ceremony, and treated with the usual hospitality; walking in the garden with the husband of the sick lady, I asked him concerning her symptoms. He answered that he knew nothing about them, but that the information I required was not necessary, for he intended to let me feel her pulse. I found her lying on the floor supported by pillows, like the lady I had first visited, but much more scrupulously covered and concealed from view, so that indeed it seemed scarcely credible, that such a mass of pillows, bolsters, and shawls, could be piled on a human being. I was not permitted to ask any questions, but when I was seated beside the patient, her husband said, the physician is there; whereupon the hand and arm most carefully shrouded and covered, except at the wrist, where a bare space was left for the finger of the physician, were protruded from the mass of pillows. When I had felt the pulse I was conducted out, and it then took me more than an hour to obtain answers to the necessary questions; for a special message had to be sent into the harem to inquire about each particular symptom and circumstance, such as the patient's sleep, the state of her bowels, thirst, uneasy sensations, &c. &c. In the end it turned to be a case of simple catarrhal fever, and yielded to a sal-ammoniac mixture.* During the three years and a half I practised in Turkey, I had at least an hundred attendances in harems, and have always found that the young and beautiful are the least careful of concealing themselves from view, while it was always im-

* The muriate of ammonia is much used in Germany, in various febrile and chronic complaints. It appears to be a remedy deserving of attention, and I shall therefore take an opportunity hereafter of explaining its medicinal virtues.

possible to get a glimpse at the more elderly and faded. When the veil is allowed to perform its duty undisturbed during the whole of his visit, the physician may be sure that the wearer's beauty is on the wane. The jealousy of the husband seems to increase with the number of his wives, and when his harem contains but one, the physician is admitted with more facility. Still it is not in the power of any husband to prevent the visits of the physician, for let his jealousy be ever so vigilant, it will be eluded, and as a last resource, the lady has nothing to do but fall sick during her visit to the bath, and send for a physician; at certain periods the use of the bath is inculcated by the Mahammedan ritual, and no husband dare, therefore, debar his wives from this enjoyment. When a physician has a patient in a harem, it is his duty to send every morning to inquire how her ladyship (*channem*) has slept, &c. In answering his inquiry, the lady informs him, at what hour it is her wish to see him. This ceremony goes on until the patient recovers, when the physician receives, in token that his services are no longer required, a present of a silk shirt, a pair of silk trowsers, an embroidered girdle and handkerchief, and a pair of knit socks. This present is a mark of the lady's gratitude. The Turks have a very different taste with regard to female beauty, from the inhabitants of the more northern parts of Europe. An excessive *en bon point* is an essential ingredient in the composition of a Turkish beauty, and in general, by means of taking little exercise, frequent bathing, and over eating, they attain at a very early age a rotundity of figure, which to a German eye appears any thing but attractive; black hair and black eyes, with black eyebrows running together over the nose, are highly valued, and when nature has not conferred these attractions, the aid of art is invoked, the eyebrows are stained, and the skin between them painted of an appropriate colour. A Turkish beauty must not have a single hair on any part of the body, except the scalp and brow. In the baths, their female attendants spend hours in destroying the forbidden hairs, not by eradication or shaving, but by means of a composition which softens, corrodes, and destroys them, after which the whole surface of the body is rubbed and polished by means of a powder, consisting of alum and other ingredients. When this process has been successfully and skilfully performed, and when the nails of the fingers and toes have been stained orange by means of the leaves of henna (*lawsonia inermis*), then the Turkish beauty is irresistible in the eyes of all true Moslems."

The Turkish ladies make use of a cosmetic which Dr. O. strongly recommends to such of our fashionables as are in the habit of employing the deleterious substance called *rouge*. It consists of a peculiar preparation in the form of a powder, derived from the bulbs of the *Iris florentina*. The bulbs are dried and powdered, and the powder is macerated in water, after which it is squeezed through fine soft linen. This is

twice repeated, and the residual powder which remains in the bag is carefully dried and kept in bottles. A little of this powder is placed on the cheek, and the part is then gently rubbed for several minutes with the palm of the hand; a sensation of heat in the cheek is thus produced, which is accompanied by a natural looking red blush, which lasts for several days without fading, and is not spoiled by perspiration or heat. The antimonial cosmetic which they call *surmeh*, is used for dyeing the eyelashes and edges of the eyelids, and they dye the hair of a beautiful black, by means of a paste formed with burnt nut galls, boiled with vinegar, and applied very hot. The *pulvis depilatorius*, *rusma*, so generally used in Turkey, consists of orpiment and quick lime, and is applied, as was before observed, for the purpose of destroying the hairs of the axilla and other parts in females. It is formed into a paste with warm water, and laid on in a thin layer, which is then washed off in a few minutes. It does not destroy the roots of the hair, and consequently does not prevent its subsequent growth. Another preparation, used for the same purposes, and whose active ingredients are the same, is called *Oth*; in consistence it resembles very fine aluminous clay, and is made into a soft mass by means of trituration, with scented soaps and rose leaves.

Although moderation in both eating and drinking is very general among the Turks, and the use of wine forbidden by their religion, yet it does not appear that they are longer lived than other European nations. The inhabitants of Chios* indeed, both Turks and Christians, are celebrated for their longevity. Dallaway conversed with a bridegroom in Chios, who was 120 years of age, and whose son, then an octogenarian, had just been felicitated on the birth of a child. The belief is almost universal in Turkey, that such a thing exists as an *elixir vite*, and even Ali Pascha, the celebrated tyrant of Janina, employed a company of alchymists for five years in his fortress, during which time they worked diligently in search of an elixir capable of prolonging life. They failed, and Ali, enraged at the expense he had so foolishly incurred, hanged them all.

“The oriental women are like hot house plants, which blossom quickly and quickly go out of blow; at ten they menstruate, at

* This beautiful island counted 90000 inhabitants in 1722, before the devastations of the Turks, who destroyed 80000.

twelve they marry, and at thirty the catamenia cease. There is with them no intermediate stage, no twilight, to soften the abruptness of the passage from youth to old age."

Dr. Oppenheim makes an interesting remark on this subject. He says that this early development depends not on climate so much as on the race of mankind. Thus among the Bulgarians, a Slavonic race, who have settled in Turkey, the females menstruate late, and seldom marry before five and twenty or thirty, while, on the other hand, among the Jews, settled in the north of Europe, in Russia and in Poland, the females arrive at puberty two or three years sooner than the Slavonic inhabitants of the same countries.

Although the Turks are naturally a strong healthy people, yet, at the present moment, the population is far from being on the increase, a circumstance which may be accounted for by the prevalence of certain habits and customs, such as polygamy, the abuse of coffee, opium, and tobacco, &c. When to this we add the native blood shed so abundantly under a government long tottering and unstable, and the devastations of the plague, it is easy to credit the assertion of Dr. Oppenheim, that the population of Turkey undergoes a considerable annual diminution. In Turkey the mortality among children is very great, in consequence of inoculation being much more generally practised than vaccination. In the Asiatic provinces indeed, inoculation is almost exclusively employed, and this operation is intrusted to old women, who perform it very adroitly. A great number are carried off by the small pox, which Dr. O. partly attributes to the heating regimen of medicines employed for its treatment. He mentions that in Tunis, it is usual, in this disease, to rub the whole surface of the body with fresh butter, in order to soften the skin, and facilitate the appearance of the eruption, and he observes, that the custom so prevalent in hot countries of anointing the body with oil, fat, or butter, is founded upon the experience of its utility. Thus Buckhardt, the celebrated traveller, assures us, that when exposed to the heat of the sun, he experienced great refreshment from using oily inunctions, and when tired by a long day's journey, he used to feel benefit from rubbing his feet with butter. Dr. O. reserves for his forthcoming work, numerous proofs of the utility of oily inunctions in the plague and in dysentery, and he remarks, that in military hospitals they have the additional advantage of destroying *pediculi*.

The scarlet fever commits frequent ravages in Turkey; the following remarks by Dr. O. are well worthy of attention, and

prove that the prophylactic virtues attributed to belladonna, merit further investigation:—*

“ At Monastir, in 1829, scarlatina raged, both among our troops and the inhabitants of the towns and villages where we were quartered. The grand vizier, who had expended much time and money on the discipline of this his favourite *corps d'armee*, gladly accepted my proposal to try the effects of belladonna. As the troops were generally very young men, and totally unaccustomed to narcotics, the dose I gave was comparatively small: thirty-six grains of the extract of belladonna were mixed up with one pound of the extract of liquorice, and ten grains of this were given morning and evening to each soldier. The success of the experiment far exceeded my most sanguine expectations, for not more than twelve men, out of twelve hundred, sickened after this plan was adopted; of these twelve six died, and it is to be remarked, that the disease continued unabated among the inhabitants where the soldiers were quartered, after it had ceased among the latter, although they lived in the same houses.”

This experiment appears almost conclusive, and should encourage a further trial of the same practice. I had lately an opportunity of putting this prophylactic property of belladonna to the test, in the case of a young gentleman whom I attended along with Dr. Jacob, and who was at the very crisis of a violent purulent ophthalmia with ulcers of the cornea, when scarlet fever made its appearance in the family. In his extremely reduced state, a new disease would have destroyed his eyes, if not his life. We immediately put him and his brother, who was recovering from common fever, on the use of belladonna, and they both escaped scarlatina, while two other children were attacked. It is true, that after the first case of scarlatina had appeared in the house, our patients were separated from the rest as carefully as is possible to effect in a numerous family; the evidence is, therefore, so far incomplete, and indeed no positive inference can be drawn from an experiment on so small a scale.

The following interesting observation concerning the scarlet fever epidemic at Monastir, deserves notice:—

The disease invariably commenced with symptoms bearing all the characters of the true inflammatory type, and consequently some of Dr. O.'s colleagues were tempted to make use of very energetic antiphlogistic measures—measures sure to

* *Brande*, in his *Pharmacy*, scouts the idea of its prophylactic powers.

be followed by a typhous state, which generally ended fatally. A few years ago it would have been very injurious to any writer's reputation even to hint at a typhous state being induced or accelerated by antiphlogistic treatment in the commencement of any disease whatsoever. The Brunonians, who treated all febrile diseases with stimulants and opiates, were scarcely more destructive practitioners than their lancet-wielding successors. As in most controversies, truth lies between the two extremes. It is singular enough that Dr. O. did not see a single case of measles during his residence in Turkey; nor had any of his medical acquaintances, several of whom had practised many years in that country, ever witnessed one.

Urticaria and herpes, particularly in the form *herpes zoster*, are very frequent in Turkey, as are also miliary and petechial eruptions, neither of which are dangerous, unless when symptomatic of the plague.

Of chronic cutaneous complaints, the most common are impetigo, porrigo, and scabies, all of which are treated by the popular remedies, oily inunctions and sweating baths. Worms, and the diseases they produce, are very common among the Turkish children. A popular remedy is a powder formed of the kernels of wild apricots, a fruit which grows in great abundance in ASIA MINOR. A decoction of the seeds of the *Ricinus*, which Dr. O. says is indigenous in Turkey, is also used in worm complaints. Tape worm is very common, and every town has its quacks, who vend specifics for its expulsion; and, in truth, as Dr. O. testifies, they often succeed. It is from the Turks that we have lately learned the properties of the *brajera anthelmintica*. Acute hydrocephalus is almost universally mistaken for worms, and is by no means unfrequent. At Janina Dr. Oppenheim performed the operation of paracentesis in case of a boy a year and a half old, who laboured under chronic hydrocephalus. The operation excited the astonishment of the whole harem, and was repeated six times at intervals. The head diminished in size remarkably, and the child recovered—a very rare but not unexampled occurrence. Hooping cough is very common and very fatal, particularly when it coincides with dentition; scarification of the gums is very frequently resorted to when dentition is difficult and painful. Scrofula, rachitis, bowel complaints, tabes mesenterica, and disproportionally protuberant bellies are much less common among Turkish children than in other countries of Europe, a circumstance which Dr. O. attributes to their using a more nourishing diet, consisting chiefly of rice, and to the freer ventilation which the mildness of their climate permits them to enjoy in their houses. Sedentary habits, an immoderate use of strong coffee,

and an over indulgence in sensual gratifications, render the males, among the higher classes of Turks, very liable to hypochondriasis, while among the females of the harem, hysteria reigns with despotic sway.

“The chief causes of hysteria are a sedentary life and confinement, restraints with respect to sexual intercourse, the too frequent use of warm baths, the interference of unskilful midwives during parturition, and the too common habit of taking medicine to procure abortion. Barrenness is the greatest misfortune that can befall a Turkish wife, as it entails contempt on the part of acquaintances and neglect on the part of husbands, which often ends in their putting away their wives, an irreparable calamity, for a woman divorced for such a cause, is looked upon as unsound and degenerate, and can never expect to get another husband. Hence the harems are head quarters for all manner of contrivances and means supposed capable of promoting female fertility; and the physicians, old women, and midwives drive a lucrative trade in this branch of science. Injections, washes, and suppositories are successively tried, and in this manner they introduce the most stimulating substances, such as aloes, myrrh, musk, bezoar, cinnamon, opium, &c. &c. As might be expected, these means often defeat the hopes of the misguided female, and produce abortion.

“Abortion is very often brought on intentionally, and such attempts are legal and sanctioned by their ritual, provided the fœtus is under five months old, for at that period the fœtus is supposed first to have life! Hence, married women frequently ask their acquaintances or physicians for medicines to procure abortion, and do not appear to think they are doing wrong. Their object in such cases is to gratify their husbands when unwilling to have more children, or when they fear that another parturition and nursing would spoil the personal appearance of their ladies. The men administer these medicines to their female slaves, to prevent the inconvenience of an illicit offspring, and unmarried females who have become pregnant, a crime punished with death in Turkey, of course use every possible means of avoiding a discovery. Often have I been entreated to give medicines capable of producing abortion, and my refusal was attributed invariably to ignorance, for it never struck them as possible that I could have any objection on the score of morality. Saffron and savine are esteemed well suited for their purpose, but the medicine on which they place their chief reliance, is an infusion made of orange leaves and jalap; they say this seldom fails; it has the disadvantage, however, of being liable to occasion dangerous hemorrhage. It need scarcely be remarked, that this unnatural practice has a decided tendency to produce serious derangement of the uterus, such as prolapsus, schirrhus, cancer, fluor albus, &c.; prolapsus ani is also not an unfrequent effect of such medicines.

“Hemorrhoids are very common among the Turks; I have often

seen them administer, for this complaint, a strong soup made of the flesh of porcupines, and when the piles are external they sometimes touch them with the actual cautery.

“Apoplexy is not common, but asphyxia, from carbonic acid, is a frequent occurrence, for they are much in the habit of using little vessels of hot charcoal to warm their rooms and beds in winter, and are not always attentive in taking the necessary precautions to prevent such accidents.

“They seldom administer emetics, but very often purgatives, in the bilious and liver complaints, to which they are so subject. When an emetic is preferred they have recourse to some species of euphorbia, or ipecacuanha, or to tartar emetic, which, however, has been only lately introduced. On the whole, they have a great prejudice against emetics. Their mild purgatives are manna, tamarinds, and that species of rhubarb (*rad. rhei rhapontici*) which grows wild in Bulgaria and Macedonia. They are also fond of recommending the seeds of the *ricinus communis*, which grows plentifully in Turkey, and whose seeds often act rather powerfully on the bowels, when two or three are swallowed at a dose. Drastic purgatives, such as senna, jalap, scammony, colocynth, are much more in vogue, and are used, in many cases, to such an extent that the unfortunate patients die of hypercatharsis. I remember being called to see a Turkish gentleman, who had been several days under the care of an eminent Arabian physician, a man of long standing, and venerable in appearance. The latter besought me to bring some patent purgative, for he alleged that he had, without effect, administered for five days in succession, the most powerful aperients in his possession. What was my surprize at finding the patient worn out, emaciated, and feverish, labouring under an attack of dysentery, attended with most violent tenesmus, and passing at least forty stools in the day, consisting of blood and mucus!! The patient said that he felt something still irritating his bowels continually, and adhering to them so fast that all his efforts, and all the medicine he had taken, were unable to dislodge it.

“In another case of hepatitis, where I prescribed calomel powders and blood-letting, I underwent a curious examination before the whole family of the patient. ‘What,’ exclaimed a tall lean man, with fiery eyes and dark brows, a Persian by birth, and a zealous hater of Infidels, ‘What! darest thou deny that his entrails are diseased?’ Surely not. ‘And where are his entrails situated?’ In a sack. ‘False,’ cried my interrogator; ‘they swim in water. In our patient this water has been dried up, and consequently his entrails are in danger of mortifying. This drying up of the water in which the entrails swim causes his thirst, dryness of tongue, heat of skin, scantiness of urine. Therefore, hast thou most ignorantly treated this sick man in drawing fluid blood from his system, and in giving him dry and arid powders!’ All the spectators who listened to this impassioned strain of pathological reasoning, seemed struck with the

depth of knowledge displayed by my antagonist. ‘Affärim, Affärim, (bravo),’ resounded through the hall, and I mounted my horse and rode off.”

The above is a fair specimen of the good *old humoral pathology*. In the treatment of diarrrhœa (*issal*) and dysentery (*züreck*) opiates are much used, particularly when made into pills with starch and wax, a formula probably worthy of imitation.

Phthisis (*werem*) is not common, and appears very rarely as an idiopathic complaint, being generally a consequence of pneumonia or catarrh injudiciously treated.

The Turks still place unlimited confidence in the efficacy of Bezoar stones, an article so much used that to replace the natural concretions, found in the stomachs of certain animals, Pseudo-bezoars exist in Constantinople. This remnant of oriental superstition has not been long expelled from the British *Materia Medica*, and such stones brought a high price in London less than a century ago. The tears of Turkish saints are in good repute, but being scarce, are administered only in extreme cases, and in very minute doses! I know not whether it may increase the reputation of animal magnetism among the Parisian philosophers, to be told that it is a favourite remedy with the Arabian dervises and jugglers.

The orientals place much reliance on the efficacy of saliva, in curing diseases, and Dr. Oppenheim was forced frequently not merely to give proper medicines, but to spit on the affected part, a superstition derived from the circumstance of most of Mahammed’s miraculous cures having been wrought by the direct application of saliva.

Ague, in all its forms, is common in Turkey; in the Asiatic provinces it is universally believed to be the result of demoniacal possession, and exorcism is considered the surest remedy, but in the European provinces, and chief towns, sulphate of quinine is preferred.

A popular medicine, which Dr. O. has often seen effectual, is the following:—Half an ounce of fresh roasted coffee is infused with two ounces of hot water, and is afterwards mixed with an equal quantity of lemon juice. This dose is taken warm during the intermission. *Her gueilueck zitma*, *zitmai mucsellese*, and *zitmayi rib*, are the names given to quotidian, tertian, and quartan. *Gout (wedjai mefassel)*, and *rheumatism (nikris)*, are also attributed to demoniacal possession, but luckily, in these cases, the physical means employed to expel the evil spirit, such as pinching, kneading, and pummelling the patient’s flesh, stretching his limbs, cracking his joints, together with

the warm bath, &c., often act extremely well, and promote a real cure.

Dr. Oppenheim next proceeds to describe a very curious and remarkable form of gouty or rheumatic disease, which he saw very frequently in Turkey, and a variety of which I myself have witnessed last winter in a gouty patient treated in the Meath Hospital. As this disease has escaped the notice of former observers, I shall give Dr. Oppenheim's account of the matter.—

“The disease arises in some without any previous illness or obvious exciting cause, but in others it is evidently produced by cold, suppressed perspiration, &c. The patient goes to bed well, but awaking in the morning finds one or more tumors on his limbs. They are generally situated at some distance from the joint, and on the inner or flexor side of the limb. They are globular, but not very sharply circumscribed, hard, scarcely moveable, and very painful to the touch, but not at all discoloured or red, nor are they hotter than other parts. In size they vary from that of a filbert to the bulk of a fist, and attain to this magnitude in the course of a few hours, after which they become stationary. They appear on the upper oftner than on the lower extremities, and more frequently on the forearm than on the arm, and on the leg below the knee than on the thigh. Occasionally they spring up thus suddenly from the palm of the hand or sole of the foot, and are at times met with arising from a toe or a finger.

“It is not very common to find more than one such tumor on the same person, occasionally, however, several are met with. No *prodromi* are observed, nor after their appearance does the patient's general health seem affected; in some the tongue is foul, and dyspeptic symptoms are present. The seat of the complaint seems to be the cellular substance immediately outside the superficial muscles; strong, robust, and young subjects are attacked more frequently than the old, infirm, and cachectic, men oftener than women, and children very seldom indeed; strangers not acclimatized are very subject to this affection. When neglected, the disease is apt to continue for life, and by their pressure these tumors occasion not merely pain, but stiffness and inflexibility of the limb, which in time wastes from want of muscular exercise. The treatment adopted by the natives is sufficiently effectual, and consists essentially of a very persevering and diligent use of frictions, which are often continued for five or six hours in succession, and occasion, during their continuance, much pain to the patient. This process is generally carried on in the air bath.”

Gout is not near so common in Turkey as in other European states, and the physicians employ for its cure no remedy but the warm bath. Hippocrates, in his Aphorisms, asserts,

that eunuchs are never attacked with gout, but Dr. Oppenheim says, that he never witnessed so painful and violent an attack of podagra as he saw in an eunuch, a water drinker, and eschewer of opium to boot; in fact, a perfect model of sobriety, temperance, and chastity! It is curious enough, that the treatment of erysipelas by stimulants, such as the nitrate of silver, blisters, &c., lately introduced into British practice, is employed also by the Turkish common people, who, however, use a stimulant of a different nature, viz. heat. Some spread a silk handkerchief tightly over the affected part, and cover it with very porous shreds of cotton, which they set fire to; they are consumed, but the handkerchief escapes,* and during the combustion of the wool, a sensation of heat and pain is felt in the erysipelatous portion of the skin: others prefer puncturing the erysipelas in many points, with sharp spiculæ of wood, and immediately applying to each puncture the point of a burning stick. Dr. O. asserts, that he has seen both these methods successfully employed, for the purpose of *firing* the erysipelas, by which, of course, he means that the disease was prevented from spreading.

Dr. O. corroborates the testimony of those who assert, that dogs never became mad in Constantinople or Egypt, although the prejudices of the people allow the canine species to multiply in a manner quite anti-Malthusian. He remarks, that the dogs and birds of prey, the scavengers of the East, are justly entitled to the regard of the philosophers, for without their aid the "land of the sun" would soon become uninhabitable, so averse are the Turks to the removal of nuisances. Dr. O. quaintly observes, that every city in Greece claimed to be the birth-place of Homer, but every country in the civilized world refers the origin of syphilis to its neighbour. So it is with the Turks, they say it is a disease altogether of Frankish origin. It is extremely diffused, particularly in the towns, where it affords a rich harvest to the quacks, who profess to cure the disease by warm baths and purgatives, continued for twenty or thirty days in succession. The regular physicians do a vast deal of injury, by an injudicious use of mercury, which they exhibit both internally and externally in the form of calomel, corrosive sublimate, red precipitate, &c., in frightfully large doses. The chancre is in general touched with lapis infernalis, or with arsenic. The frequent employment of the bath

* On the same principle that a red coal placed on a handkerchief, stretched over a poker, does not burn the handkerchief.

and circumcision, to a certain degree, prevent the effects of impure coition, a source to which the Turks are extremely unwilling in any case to attribute the disease. Thus, a gonorrhœa is always accounted for by their catching cold, as indeed the name of the disease *belzouk*, implies (a cold in the back, from *bel*, back, and *zouk*, cold.) Their treatment of gonorrhœa is worthy of notice, but not of imitation, for they give cantharides in the form of pills or tincture, in such considerable doses, as often to produce violent irritation of the urinary organs: they are likewise in the habit of recommending astringent injections in this disease. Notwithstanding this injudicious practice, strictures of the urethra are very rare, a circumstance worthy of observation. Dr. Oppenheim, in his remarks upon the venereal disease, discloses many circumstances, which prove the almost incredible prevalence of unnatural vice in Turkey, not only among the ignorant and uneducated, but among the highest functionaries of the state. The late and the present Grand Vizier, Redschid Mehmet Pascha, are quoted as examples; in short it is evident, that the standard of morality among the Turks, is not higher than it was among the Romans in the time of the emperors, whose tyranny was well deserved by subjects totally destitute of private virtue. If other proofs were wanting of Turkish sensuality, the enormous prices they give for aphrodisiacs would alone establish the fact. Dr. O. has seen several thousand piastres given for such recipes as the following:—

R Radicis Calami Aromat.

—— Galang. Minor. ā ā ʒ ss.

Vanill. Siliq. ʒ iii.

Moschi Orientalis ʒ i.

Pulv. Cantharid. gr. iv.

Liquoris Anodyn. Hoffman. ʒ ii.

Syrupi Aurant. q. s. ut fiat Electuarium.

Sumat Cochleare Minimum.

R Radicis Calam. Aromat.

Flavid. Cort. Aurant.

Siliq. Vanill. ā ā ʒ ss.

Moschi Orientalis ʒ ii.

Perl. Oriental.

Stinc Marin. ā ā ʒ i.

Pulv. Cantharid. ʒ ss.

Olei Caryophyl.

—— Aurant.

—— Anisi ā ā ʒ i.

Ætheris Acetic. ʒ ss.

Syrup. Violarum q. s. ʒ

Sumat cochl. i. parvum.

Dr. O. saw a large price given in Cæsarea for a powder, made by incinerating the brains of male and female sparrows in equal quantities. The Doctor makes some very interesting observations on the practice so prevalent in Turkey, of eating opium, to which is added, in confirmed cases of this dreadful habit, corrosive sublimate. Some take the latter poison to the extent of ten grains daily. *Strohmayer* is quoted, as having lately published in Vienna an account of a Tyrolese peasant, who was in the habit of mixing ten grains of arsenic with his daily portion of food. Quite as extraordinary is the fact, I have lately seen in some work, that in one of the islands of the Pacific, the inhabitants have no other water to drink but sea water. Mackenzie or Hooker, I forget which, relates that in Iceland, the cows are often fed with dried fish during the winter! Those who indulge in opium, always avoid drinking water or any fluid at such times, as so doing often occasions colic. It is particularly worthy of notice, that Dr. O. himself was attacked in Turkey with intermittent fever, which at first had the quotidian form, but soon changed its type, so that the paroxym came on every seventh and afterwards every fourteenth day. In one of the clinical lectures, published in the London Medical and Surgical Journal, I have noticed this strange species of ague as occurring in some parts of Russia.

The following account of the effects of opium is extremely interesting :—

“ In the month of May, 1830, I attended Abduraman Pascha, on his journey from Koniah to Kütaja. We bivouacked one night near a little village called Karako, and, as usual, I slept without covering my head as the Turks do, when they spend the night in the open air. Next morning my dragoman awoke me, just in time to depart with the rest ; but I was unable, being affected with a violent pain in the head, and feeling myself stupid and giddy like a drunken man. I heard the voices of those around me, but did not understand a syllable of what they said, I could not speak, and again fell asleep. In a few minutes I was astonished by a violent shock and dashing of cold water on my head : this aroused me, and I found that my companions had hastened to bring up one of the camels, and had emptied one of the skins upon my head, thus promptly and ingeniously finding a substitute for a shower bath. In fact I had been in a state of narcotism, induced by the neighbourhood of an opium field, in which the poppies were in full blow. In the course of an hour, I was enabled to pursue my journey. The occurrence showed me, that they were long aware of the utility of the cold dash in Turkey, a practice only lately recommended in Germany, on the authority of the English physicians, Copland and Wray, in cases of poisoning by narcotics. On another occasion I

slept near Brussa in an open field to leeward of a large caravan of camels, laden with opium, and again I awoke in the morning with nearly the same symptoms."

Dr. O.'s observations upon the causes which render insanity and mental derangement so extremely rare in Turkey, are very interesting, and well worthy of being studied by those who devote themselves to medical statistics. Here it is sufficient to remark, that their habitual suppression of the feelings of extravagant joy or sorrow, the fatalism inculcated by their creed, the contempt with which they regard all scientific or practical improvements, their total ignorance of passion-stirring literature, the absence of all scepticism with regard to the truth of the Koran, and the want of the sentimental feelings of love; all these circumstances combined, cause each individual to look upon the wants of life with comparative apathy; in consequence of which, suicide and madness are almost unknown in Turkey. Suicide is most frequent in highly civilized nations, where murder is rare; while in countries where ignorance prevails, murders are very frequent and suicides rare. France is an example of the former, Ireland of the latter. It is excessively rare to hear of a suicide in Ireland, an Irishman indeed scarcely ever thinks of killing himself, but he frequently kills his neighbour.

The only examples of persons committing suicide, Dr. Oppenheim met with in Turkey, were three, two of whom were Christians, and one a renegade. Of the degraded state of Christianity in the East, no one can form a notion who has not witnessed the ignorance and superstition of the priests of the Greek church: Tournefort's travels in the Levant elucidate this assertion most amply. Among these Christians too, insanity is much more frequent than among the Turks; a fact which clearly proves, that the fatalism inculcated by the Koran exercises a decided influence over the mental constitution of the Moslem. Religious madness is unknown among them, for their religion consists, not of spiritual doctrine, but of blind obedience to a code of laws, which embraces, not motives, but mere actions, and which promises the enjoyments of Paradise to all those who believe in God and his prophet Mahammed. A non-observance of these laws, and occasional criminality, may retard, but cannot finally prevent their entrance into Paradise. They pass their lives in the fancied security of ultimate happiness, and consequently, they consider the misfortunes of this life, as transient, and unworthy of exciting deep or lasting exertions. Still the feelings of nature cannot be wholly exiled from the human breast, and the Turk who regards the near approach of personal misfortunes, or even death, with calmness and apathy, often exhibits symptoms of most intense feeling, when a be-

loved child or wife is attacked with an acute and dangerous disease. Then he calls in the assistance of every physician he can procure, and to remunerate them he is willing to make the greatest sacrifices: should the disease continue, however, for many days, his religious tenets resume their wonted sway, the Physicians are dismissed, and the patient is resigned into the hands of destiny. Some new medical man comes into the neighbourhood, when again the voice of affection is listened to, and the immutability of fate for the time forgotten. Sceptics in religion are scarcely ever met with in Turkey; Dr. Oppenheim witnessed but one instance; he was in attendance, during the last few days of his illness, upon Cemar Effendi of Kütaja; he was not afraid of death, but he was very anxious to know exactly how long he had to live. "Shall I," said he, "see the sun rise and set to-morrow?" "You cannot live until sunrise," replied Dr. O. "Then before sunrise I shall know whether Mahammed is an impostor!"

Although insane persons are so rare, naturals and idiots are not so unfrequent; and occasionally idiocy is produced in children artificially, by means of giving the child small doses of narcotics from its very infancy; a practice which, by stupefying the sensorium, prevents the mental development, and ends by producing a state of fatuity. This is an extremely curious fact, and I believe that Dr. Oppenheim is the first who has given us authentic information upon the subject. This practice of rendering persons idiotic, is the source of great emolument to some; and Dr. O. says, that it is carried into effect, not merely upon children, but upon adults, when it is judged necessary to render them incapable of conducting their affairs, while at the same time, their removal by death appears, for certain reasons, impolitic and inexpedient.

The present Sultan is said to have had recourse to this infamous proceeding, in the case of his son and heir apparent to the throne, Abdul-Medschid, a boy nearly thirteen years old; he committed this act, lest the Janissaries and their friends might seize an opportunity of dethroning himself, and of elevating his son in his stead; a fear which had led him, at a former period, to sacrifice his eldest son, then a boy of tender age. The reigning Sultan is the last of his father's thirty children, and is the sole remaining descendant of the family which sprung from Mahammed, that has hitherto been in hereditary possession of the throne. The loss of such gentle blood would be irretrievable; and therefore it is to be hoped, that some of the kings and emperors, who on all sides press forward to prop up the falling fortunes of the Sultan, will be able to persuade him to abandon this Saturn like-propensity. A moral lesson on the subject of the

ties of blood, would come particularly well from the autocrat of all the Russias, own brother of the *deceased* Constantine, father of regenerated Poland.

The only hospitals of any sort in Turkey, are those appropriated to the reception of idiots, institutions better regulated than could be expected, in a country otherwise so backward in civilization. The inmates are generally persons afflicted with fatuity or epilepsy, and the idea so universally prevalent, that these diseases partake of a sacred character, operates very favourably in increasing the number of alms contributed to their support, and consequently these hospitals abound in Turkey.

Surgery has hitherto scarcely deserved that name in Turkey, and indeed it could not be otherwise, in a country where dissection, or even opening a dead body, is expressly forbidden by the Koran; "thou shalt not open the body even of a criminal, who has stolen and swallowed pearls of price," are the emphatic words of the prophet. The present Sultan has caused to be published at Constantinople, a large folio, a sort of cyclopædia of practical medicine, surgery, and anatomy, with anatomical plates, which is used in the medical school established under his auspices, but is ill understood by the pupils, on account of containing many Greek and Latin phrases, either untranslated, or translated very badly.

A Turkish surgeon has no instrument but a lancet, scissors, searing iron, and a forceps for extracting balls. Except bleeding and cupping, in the latter they are great adepts, they never perform an operation, as they dread hemorrhage, which they are totally unable to control; their only resource being, the application of some styptic powder, or else the iron ore, called hematite, to the bleeding part. In some cases, they sear the wound with the actual cautery: when the limbs are chopped off by the executioner, the only person who ever performs an amputation in Turkey, the criminal's friends arrest the bleeding in this manner. He who is caught in the act of thieving, has his hands cut off; the Koran is explicit in enjoining this punishment. For slight offences, they nail the ear to a post, at such a height, that the sufferer just touches the ground with his feet, a position by no means enviable. Scarifications of the skin are very frequently used, and often with great benefit: they apply them to relieve pains in all parts of the body, and use them in persons of all ages. I have known this operation to be performed in the country parts of Ireland, with great benefit, in a bad case of sciatica: the operator made twenty or thirty very superficial, but long incisions in the skin, close to each other, so as nearly to cover the calf of the leg; much blood flowed from the wounds.

Abscesses the Turks treat with poultices, made of figs and honey, and never venture to open them. They pour oil or melted butter into gunshot wounds; inflamed and painful wounds, they cover with the hot flesh of an animal recently killed, or else apply to them an ointment, made on the spot, by beating up white lead with eggs. When an ulcer is relaxed or indolent, they lay chewed figs upon its surface, which they sometimes sprinkle with a little arsenic or red precipitate. In cancerous sores, they are acquainted with the use of animal charcoal, which they applied, not in substance sprinkled over the sore, but made into a liniment with oil. Being totally unacquainted with the use of either charpie or lint, they apply cotton, in the shape of dressing, to sores; a practice which, as Dr. Oppenheim remarks, has deservedly found advocates in Germany, as well as England, particularly when the sores are extensive, and the process of scabbing may be attempted with a prospect of success. Dr. Oppenheim says, that he has found nothing so effectual or so convenient, for the cure of the ill-conditioned surfaces, occasionally produced by blisters, as dressing the part with very fine cotton wadding; this must be kept applied to the part by means of a bandage; the exudation from the blistered surface soon concretes, and causes the cotton to stick closely, forming a sort of scab, under which the part often heals without further trouble. This process has been likewise adopted with great advantage, in cases of extensive scalds and burns, in our manufactories and hospitals, and is founded on most rational principles. In cases where the external surface is extensively denuded by wounds, I have little doubt that the process of scabbing might be often facilitated by a similar treatment. Poisoned wounds the Turks suck, excise, and cauterize. There are many of them who profess only a single branch of surgery, as bone-setting, operators for cataract, hernia operators, lithotomists, &c. &c.; such persons often enjoy a great reputation, which is handed down from father to son. They observe strict secrecy as to their modes of operating, and boast unceasingly of their success. Dr. O. does not deny, that on many occasions he witnessed results, which proved them to possess considerable expertness; this is true, for example, with regard to the professed bone-setters of our own country. Here, as in the East, they often do irretrievable mischief. The quack is never blamed, however, in such cases; this is their privilege all over the world. The Turkish bone-setters use bandages and splints innumerable, and have the merit of having introduced the very curious method of keeping the ends of broken bones in apposition, by means of plaster of paris, applied soft, and left on until it sets, and thus secures the proper position of the limb. The Turkish

surgeons hold amputation in abhorrence, and so great was the prejudice of all ranks, from the soldier to the vizier, against this practice, that Dr. O. was unable to introduce it even in cases of gunshot wounds, with comminuted fracture, &c. &c. Cases of this nature, altogether desperate and hopeless, unless amputation was immediately resorted to, the Turkish surgeons promised to cure without it; and because Dr. Oppenheim could not promise with certainty, that the patient would, in every case, recover, he was soon prevented from performing the operation in any!!

As to operations after battles, in the Turkish campaigns, none were performed on the wounded prisoners, as they were universally beheaded the next day, by command of the vizier, to whose army doctor Oppenheim was attached; occasionally, the clemency of the conqueror exhibited itself in rather a singular way, for he ordered the prisoners who were wounded in the back to be spared, as an encouragement to flying enemies!! On one occasion, after the battle of Monastir, the wounded and other prisoners were included in a treaty, and twenty Turkish piastres a head were paid by the Albanians, as ransom for their captive countrymen. As soon as the money was in the pocket of the vizier, he beheaded the wounded, and sent the rest to be sold as slaves at Constantinople!* Tooth drawing is entirely in the hands of the barbers, who, in Asia minor, may be seen in the streets, employed in boiling coffee, which they sell by the cup, or in drawing teeth with the forceps, the only instrument they use. Hernia is very frequent in Turkey, and often proves fatal: the early age at which they all practise horsemanship, their bad saddles, and bad roads, make them liable to be violently shaken in riding; this probably, accounts for the frequency of hernia. There are no trusses made in Turkey, and consequently the poor are totally unprovided with them; a few of the wealthy, procure them from Vienna, France, or Italy, but these, in the course of time, being repaired in a bungling manner, look like any thing but trusses, and injure, rather than serve the wearers. The Turkish surgeons are totally unacquainted

* An able writer in the Dublin University Magazine for July last, has taken upon him the defence of the moral character of the Turks and of the Sultan, and invokes Europe to protect the latter from the barbarous Egyptians! He speaks of the sultan's paternal affection for his children, and asserts that his eldest son died of the small pox. Let him read Doctor Oppenheim's book in the original, and I think he will feel as little inclined to plead the cause of Sodom and Gomorrah, as that of the sultan and his paschas; I am glad to see the true character of the sultan exposed, in a letter from Constantinople, published in the *Standard* of July 8th.

with the operation for freeing strangulated hernia, but they frequently attempt the radical cure of ruptures, by means of ligature, or the actual cautery.

"I had an opportunity of witnessing, at Jenetschär (Larissa), this operation performed by surgeon Michalaki of Sagor. The patient was a robust man, about forty years old, who had the hernia for many years, and was now resolved to get rid of it, on account of the inconvenience it caused when he rode. When the operator had convinced himself that the gut could be easily returned, he tied the patient on a board, forming an inclined plane, so that the patient's feet were much higher than his head.

"With one hand he pressed against the neck of the sac, so as to prevent the gut from re-entering it, with the other he made an incision into the tumour, extending from about one inch above Poupart's ligament, to two inches below it. He thus brought to view the proper hernial sac, or as he termed it, the bladder of the rupture. This he pulled forcibly, with both hands, out as far as possible, tied a strong silken string round the neck of the sac near the ring, and cut away the sac below the ligature. The spermatic chord was evidently included in the ligature, which I remarked to him; but he stoutly denied the possibility of his having committed so unfortunate a mistake!"

Generally, this gentleman and others, who perform similar operations, avoid including the spermatic chord in the ligature, by pushing both it and the testicle into the abdominal cavity. The ancient cruel method of using the actual cautery, to produce the inflammation necessary to close the hernial aperture, is now seldom resorted to. Some of the rupture doctors affect all the state of our ancient quacks; when they enter a town, they proclaim their approach with sound of trumpet, and ostentatiously display, like a standard, a long pole, from which hang the numerous hernial sacs they have amputated.

Hernia and the stone, probably on account of the pain they occasion, are the only two diseases in which the Turks permit operations. *Calculus* is very frequent in some provinces of Turkey, particularly Macedonia, Epirus, and Thessaly, and Dr. O. mentions several instances, where the disposition to the disease seemed to be hereditary. The operation of lithotomy always used, is that described by Celsus, formerly called *cutting on the gripe*, or the *lesser apparatus*. The after treatment is altogether neglected, antiphlogistic remedies never applied, and the absurd regulation enforced, of keeping the patient from sleeping for four-and-twenty hours after the operation. This is effected by means of music and various noises, perpetually kept up in his chamber. Unfavourable as are all these circumstances, the mortality is by no means so great as might be expected, and

Dr. O. saw many large stones thus extracted, with a happy result. The Turks, he observes, are much less liable than the Franks, to suffer bad consequences from wounds or operations; this was strongly exemplified among the wounded of the Russian and Turkish armies; the habitual abstinence of the latter from spirituous liquors, and their moderation in the use of animal food, may contribute, he thinks, to render the consequences of inflammation less violent and dangerous. Diseases of the testicles and their appendages are very frequent, and Dr. O. justly attributes this to the narrow curved shape of the Turkish saddles, and their peculiar mode of riding, in consequence of which, the testicles receive a great shock each time the horse is suddenly checked; a practice they are very fond of, in shewing off their horsemanship. Dr. Oppenheim's observations on eunuchs, are extremely interesting.

“Jealousy, the natural effect of polygamy, has rendered Mahamedans extremely watchful of their wives, and has multiplied the number of eunuchs. The sufferers are brought in their youth from Africa, where they are purchased as slaves in Sennar and Darfour, and are delivered into the hands of the Coptic monks in Egypt, who almost exclusively cultivate this branch of national industry. The occupation is detested by the Egyptians, but the government, nevertheless, protect those who are engaged in it, on account of the profits derived from so lucrative a trade. The pascha of Egypt has conferred certain privileges and immunities on the village *Zawyet el Deyr*, near *Saout*, because its inhabitants (who call themselves Christians!) have obtained great celebrity in this occupation. The number annually thus mutilated, is certainly considerable, but it falls far short of the estimate of Tavernier, who says, that in 1659, twenty-two thousand eunuchs were sold in one province alone. Many, no doubt, die of the operation; the age generally selected, as the safest for its performance, is from six to seven. The operator encloses the testicles and scrotum with a tight ligature, and then cuts them off at one stroke, with a sharp razor. The actual cautery, or styptic powders, the composition of which is a secret, are used to restrain the bleeding. Although the best-looking boys are selected, yet they never grow up handsome, and the adult eunuch may always be distinguished, not merely by his childish piercing voice and want of beard, but by a certain expression of premature old age, together with hollow eyes and prominent cheek bones. The opinion entertained by some, that eunuchs, being deprived of enjoyment themselves, hate the rest of mankind, and are cruel and unfeeling, I must positively deny, for I have known many of a kind and most benevolent disposition, nay I have watched with surprize, how contented and happy they seemed to be. It is true, when provoked, they are hasty and revengeful, but what African is not? The number sold annually at

Constantinople, is about 300 ; they generally cost about 20,000 Turkish piastres a piece, while a common male slave is sold for one or two thousand."

Doctor O. had several opportunities of witnessing the performance of circumcision in Turkey ; in a surgical point of view, it offers nothing of interest, and therefore, at present it is sufficient to remark, that it is not performed until the sixth year, and the day of circumcision is celebrated by great feasts, and by presents from every member of the family. Dr. Oppenheim's account of the pomp and ceremony observed on such occasions, in the families of the great, is very amusing. It may be well to mention, that the inner layer of the prepuce is not cut so short as the outer, and consequently it still affords a covering to part of the glands. In many, so small a piece of the fore skin is cut off, that it is not easy to say, when the person grows up, whether they have or have not been circumcised, an assertion illustrated by the fact, that Dr. Oppenheim was twice obliged to perform the operation for Phymosis on Moslem.

Ophthalmia is very common in Egypt, but not in other parts of Turkey. The native surgeons are of opinion, that the cataract is produced by some foreign body, which falls from the head into the eye ; they are very expert in performing the operation of depression with a needle, which they insert through the cornea. Doctor Oppenheim created great astonishment by the effects of an electrical machine, which he occasionally used in cases of amaurosis.

The blind are provided for to a considerable extent in Turkey, being the only persons allowed to ascend the minarets or towers of the mosques, for the purpose of proclaiming the times of prayer, five times a day. As these towers command an extensive view of the tops of houses, where the women often air themselves and bathe, none but the blind are permitted to perform this office.

The dumb are favourites with the great, and are constantly employed as valets to wait on them, in the most confidential manner ; this partiality is founded on the belief that they can tell no tales. But Dr. Oppenheim testifies, that they do not always possess this good quality ; for in the campaign against the Albanians, most important intelligence was received, through the means of a dumb spy, who waited on one of the revolted chiefs.

ROBERT J. GRAVES.

SCIENTIFIC INTELLIGENCE.

CHEMICAL AND PHYSICAL SCIENCE.

Action of Anhydrous Sulphuric Acid on Alcohol and Ether.—

The great affinity which anhydrous sulphuric acid has for water made me suspect, that the action of this body on alcohol and ether might lead me to some useful result with respect to the formation of ether. Having then passed some of the anhydrous acid into some absolute alcohol, there was disengaged from it, as soon as the temperature was raised, sulphurous acid and an odour of oil of wine; but on preventing the elevation of the temperature, and conducting the operation slowly, all the sulphuric acid was absorbed by the alcohol, and there was formed an oleaginous liquor without the disengagement of any gas. If too little alcohol were employed, crystals of anhydrous sulphuric acid were formed; they keep a considerable time under the oleaginous liquid just mentioned, but are dissolved, however, when more alcohol is added. If the alcohol be used in sufficient quantity, the liquid produced mixes with the water without any sensible disengagement of heat. On adding some baryta, there is obtained a considerable precipitate of a sulphate of this base, and at the same time a soluble salt of baryta, which is very readily decomposed, and which cannot be made to evaporate but under a pneumatic pump. It contains some sulphuric acid, but it is not sulphovinate of baryta; for this is soluble in alcohol, crystallizes, and gives, at a high temperature, sulphurous acid and oil. The new salt, on the contrary, is not dissolved in alcohol, cannot in any way be made to crystallize, affords no oil, unless when carried to a high temperature, but instead of that, sulphuric acid in considerable quantity, and diffuses an empyreumatic odour of a particular nature.

This salt being dried several days under the pneumatic machine, left, after three analyses, which consisted in calcining it in a porcelain crucible, the following quantities of sulphate of baryta:—

61,480 for 100	}	Mean . . 61,333 for 100.
61,122		
61,398		

On boiling it with nitric acid, or on dissolving it with a mixture of chlorate and carbonate of potass, and then decomposing it by chloride of barium, there was obtained from it double of the sulphate of baryta. It contains, consequently, like the sulphovinate of baryta, twice as much sulphuric acid as the baryta requires for saturation. On burn-

ing it with oxide of copper in the apparatus of Liebig, there was obtained in three analyses—

Carbonic Acid.	Or Carbon.	Water.
40,030 p. 100	11,068 p. 100	22,949 p. 100
43,526	12,032	22,180
40,560	11,215	21,517
Mean . . .	11,438	22,215

Since, besides this new combination, the anhydrous sulphuric acid and the absolute alcohol only produce sulphuric acid without any gas being disengaged, or without any oxidized body being formed, it is necessary that the carbon in this new compound should be combined with as much hydrogen as in the alcohol. By calculating according to this, we obtain, for the composition of the salt, the following numbers:—

Sulphuric acid	- - - - -	42,162 p. 100
Baryta	- - - - -	40,252
Carbon	- - - - -	11,438
Hydrogen	- - - - -	1,869
Water	- - - - -	5,381
		101,102

According to this the salt is composed thus: $2 \overset{\cdot\cdot}{\text{S}} + \overset{\cdot}{\text{Ba}} + \text{C}^1 \text{H}^8 + \text{H}.$

Accordingly, on calculating anew each of the elements according to this formula, we obtain—

Sulphuric acid	- - - - -	41,292 p. 100
Baryta	- - - - -	39,421
Carbon	- - - - -	12,596
Hydrogen	- - - - -	2,057
Water	- - - - -	4,634
		100,000

Consequently, the acid might be considered as composed of anhydrous sulphuric acid and ether.

As there is always produced, at the same time as this new acid, a corresponding quantity of hydrated sulphuric acid, I was obliged to determine by means of carbonate of baryta, as I did for the sulphovinic acid, in what ratio the two acids were formed. Several experiments shewed me that whilst three parts of sulphuric acid combine with the carbon, and with half the water of the alcohol, one part of sulphuric acid seizes on the other half of the water, and forms the

combination $\overset{\cdot\cdot}{\text{S}} + 1\frac{1}{2} \overset{\cdot}{\text{H}},$ whilst in the production of the sulphovinic acid, that which is formed is represented by $\overset{\cdot\cdot}{\text{S}} + 2 \overset{\cdot}{\text{H}}.$

On making sulphuric acid pass into ether, instead of absolute alcohol, there is obtained a yellow liquid similar to that afforded by alcohol. It mixes with ether in all proportions; the water, however, separates from it this ether in excess, and at the same time some oil of wine containing a portion of sulphuric acid. The aqueous liquid, treated with baryta, yields sulphate of baryta, and the same soluble salt of baryta obtained on employing absolute alcohol. The identity of these two salts is confirmed by burning the latter with oxide of copper.

The presence of the oil of wine by reason of the readiness with which this body is decomposed, renders it impossible to determine the relative quantities of the salt which was formed, and of the hydrated sulphuric acid obtained. But it presents itself each time; and it is on this circumstance that the simultaneous production of the oil of wine depends. One part of the ether yields, in fact, its water to the sulphuric acid; thence results a combination of olefant gas with less water, which forms, with another part of the anhydrous sulphuric acid, a neutral sulphate of bicarburetted hydrogen (*huile de vin pesante*), whilst the other part of the ether combines with some anhydrous sulphuric acid to form this acid different from the sulphovinic acid.

The barytic salt of this acid is very easily decomposed, yielding some sulphate of baryta, especially when heated. The decomposition of the acid separated from the base is still more easily effected. On boiling it, and then saturating it anew with baryta, we obtain, together with sulphate of baryta in abundance, a soluble salt of this base which contains some sulphuric acid which crystallizes, and is essentially distinguished as well from the sulphovinate of baryta as from the new salt just described, by the decomposition of which it is formed. It is dissolved with difficulty in alcohol, and yet more easily than the first salt, so that if the decomposition of the first has not been complete, and there is then a mixture of the two salts, they may be separated by means of alcohol well concentrated and in large quantity.

This salt is easily crystallized from an alcoholic solution, or from an aqueous solution. It may, without decomposition, resist a temperature of 200° , (which very few combinations of this kind can support); it yields neither water nor any other ponderable matter.

We must, then, conclude from this, that it contains no water of crystallization. If the temperature be raised still higher, it swells up in an extraordinary manner, becomes black, disengages a liquid which has not as yet been submitted to analysis, and exhales a penetrating odour of a peculiar nature, which has some analogy with that of the oil of Xanthogen described by Zeise.

This salt possesses the remarkable property of detonating with violence, when mixed and heated with chlorate of potass or saltpetre. A considerable portion of carbonate of soda does not prevent this action. Thus it was not possible to determine with perfect exactness

the quantity of sulphuric acid contained in the salt. The process which succeeded best was to reduce to a very fine powder a mixture of this salt with three times its weight of saltpetre, and a similar quantity of carbonate of soda, to throw it, in small portions, into a platina crucible previously heated, and each time to cover the crucible at once.

Simple calcination is not sufficient to determine the sulphate of baryta which this salt leaves, for it swells to such a degree as to occupy one hundred times its original volume, and oftentimes a very small quantity passes over a very capacious crucible in which it is heated. The black and porous mass which remains behind, by preventing the air from coming in contact with the carbon which is mixed with it, renders its perfect combustion impossible.

We may determine with nitric acid the proportion of sulphate of baryta; but the decomposition by means of this acid, even when fuming, is effected so slowly, that we cannot avoid the volatilization of a small quantity of acid, even when the process is conducted with a very long-necked matrass. Neither has a more satisfactory result been obtained by adding nitrate of baryta to the nitric acid, with the view of combining forthwith all the sulphuric acid with the baryta. Multiplied experiments have, however, proved, that the salt contains twice as much sulphuric acid as is necessary for saturating the baryta which it contains. On decomposing it with fuming nitric acid, there was left, after two experiments, the following quantities of sulphate of baryta:—

	60,433 for 100
	60,480
	<hr/>
Mean - - -	60,456

Three analyses with the oxide of copper yielded—

Carbonic Acid.	Water.
47,041 p. 100	23,077 p. 100
45,577	24,005
44,094	23,783
	<hr/>
Mean 45,570	23,621

As 45,570 p. 100 of carbonic acid correspond to 12,830 of carbon, the composition of the salt is as follows:—

Sulphuric acid - - - - -	41,558 = 2 S
Baryta - - - - -	39,677 = Ba
Carbon - - - - -	12,830 = 4 C
Hydrogen - - - - -	2,097 = 8 H
Water - - - - -	4,742 = 1 H
	<hr/>
	100,904

Its composition is then the same as that of the salt already described, and which, on being decomposed, yielded the former; consequently, they are *isomeric*. But since, in the decomposition of the former, there is separated some sulphuric acid, there must also be separated some carbon, hydrogen, and oxygen, and that in the proportions which represent ether. The two latter elements may form water, but it cannot be obtained separately, since the acid decomposed was diluted in water. Still I have not been as yet able to recognize the presence of the carbon and hydrogen, which must be eliminated; there is no kind of gas disengaged during the decomposition, and I have not ascertained that there was any ether, alcohol, or an oil produced. Perhaps this may be owing to the circumstance of my having employed too small quantities of the several substances in my researches. On repeating these experiments on a larger scale, we shall ascertain, no doubt, what is the combination of hydrogen, carbon, and oxygen which is produced. I hope to be able to resolve this question at the end of this process; at the same time, I shall give the description of the two new isolated acids, and of the other salts which are formed. The result of these experiments, up to the present, might be this:—

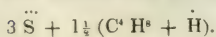
There are three combinations of sulphuric acid and of carburetted hydrogen (etherine); these are acids. One of them, the sulphovinic acid, is composed of anhydrous sulphuric acid and alcohol; its barytic salt contains one atom of water of crystallization: $\text{Ba} + \text{C}^4 \text{H}^8 + 2 \text{H} + \text{Aq}$. Decomposed in the dry state, and at a temperature not very high, it yields some alcohol and no ether.

This acid is formed, as is known, during the action of concentrated sulphuric acid on alcohol or ether, at a high temperature. At the ordinary temperature the sulphuric acid absorbs the ether as well as the alcohol; but it forms sulphovinic acid only with the latter, whilst we may separate the ether again from the sulphuric acid by treating it with water.

In this absorption of absolute alcohol, half the sulphuric acid combines with it, to afford sulphovinic acid; its water passes to the other half, and produces $\text{S} + 2 \text{H}$.

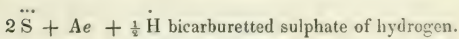
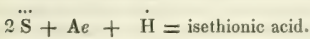
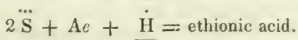
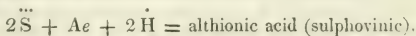
The two new combinations of the sulphuric acid and the bi-carburetted hydrogen (etherine), are so constituted, that we may consider them as formed of anhydrous sulphuric acid and ether; they are *isomeric*. The one is obtained by causing anhydrous sulphuric acid to act on absolute alcohol or on ether at a mild temperature, and the other on decomposing the first. In the formation of the latter, one part of sulphuric acid takes from the alcohol the half of its

water, and forms the acid $\text{S} + 1\frac{1}{2} \text{H}$, whilst three parts of sulphuric acid combine with the ether which remains; whence there results



In consequence of the composition, we might give to this acid the name of *ethersulphuric acid*, and that of *isethersulphuric* (from *ἴσος*, equal) to the acid arising from the decomposition of the former; or if we reject these names, we might take the Greek *θειον*, which means *sulphur*, and *οἶνος*, *wine*, to form from it, after the example of Sertuerner, the names *ænothic* (sulphovinic), or *ænothionic*, *etherothionic*, or *ethionic*; and, in fine, *isethionic* or *isetherothionic*. From its composition, instead of calling the sulphovinic acid *ænothionic acid*, it might be called *alcoothionic acid*, or, by contraction, *althionic acid*.

The combinations of etherine and of sulphuric acid known to the present time are the following:—



On considering the composition of these combinations, and observing that several of them are now known, which differ only in the quantity of water they contain, it will be admitted that the sulphovinates, that of baryta, for example, are composed of sulphate of baryta, combined with bicarburetted sulphate of hydrogen, or sulphate of etherine. If we would go farther, and consider with MM. Dumas and Boulay, that the etherine may take the place of ammonia it could not be in the etherine that we should suppose this property, but rather in a combination of etherine with water: it must be at the same time admitted, that these different combinations of etherine with water have relations to each other similar to those of a metal to oxygen, in this way, that the etherine takes the place of a metal, and represents a radical which is united with water, instead of combining with oxygen.

We shall also be disposed to regard alcohol and ether as combinations of etherine with water, and I doubt not but that the same radical (consisting of two or more elements) is frequently found in organic nature, combined with water in different proportions; but notwithstanding that, neither alcohol nor ether should be taken as bases in their combinations with sulphuric acid, for the characteristic of a base is that of being separated from the acid to which it is united by a more powerful base; and I have not been able to succeed in effecting this separation of ether and alcohol from their union with sulphuric acid by means of the strongest alcalies, no more than by employing ether against alcohol, or alcohol against ether.—*Annal. de Chim. et de Physique*, February, 1833.

On the Composition of Acetic Acid, by M. C. Matteucci.—The powerful influence of the opinion of M. Berzelius over that of other

chemists was hitherto opposed to the mode of representing organic combinations by the binary compounds which might result from the union of their elements. Nevertheless, the beautiful researches of M. Gay Lussac regarding alcohol and ether, those of Chevreul respecting fatty bodies, and last of all, those of MM. Dumas and Boulay on ethers, have put it beyond doubt that well determined organic combinations, that is to say, which have a constant point of boiling and of solidifying, and a constant specific gravity, must have their molecules arranged and combined by constant laws. Many vegetable acids having a determinate composition, a constant fusing and boiling point, uniting with inorganic compounds, after the same laws, should certainly be reduced to a mode of composition similar to that of minerals. It is by studying the action of physical and chemical agents on these bodies that we can determine the nature of this composition. A process of this kind I undertook with respect to acetic acid, by which I think I have arrived at the proof of its being similar in its composition to hydrocyanic acid, that is to say, formed of hydrogen and oxide of carbon. We know that the composition of acetic acid is represented in volumes by the formula $H^6 + C^8 + O^3 +$ one volume of water $H^2 O$, and that consequently we should not consider all formed in the acid, but rather with its elements differently combined. If, however, we reduce acetic acid to its binary combinations, we have $C^8 + H^8 O^4$, a mixture of water and carbon, which is not in accordance either with the action of agents on this body, nor with the ideas we have of acids in general. We may even express acetic acid by the formula $H^6 C^4 + (C^4 O^4 H^2)$, that is, by an oxalate of carburetted hydrogen. But we see that in this case the capacity of saturation of the acid would be diminished by the union of the carburetted hydrogen which acted as a base; besides, no body, not even potass, by acting on acetic acid, produced oxalic acid. Likewise, we have the composition of acetic acid by a combination of formic acid and carburetted hydrogen. To see if this were true, I mixed equal parts of sulphuric and acetic acids; I left the mixture to itself. After a long contact, on adding to the mixture some acetate of lead, I obtained nearly the same quantity of sulphate of lead as a quantity of sulphuric acid equal to that mixed with the acetic acid yielded. I distilled an equal mixture, and obtained pure acetic acid. I shall observe, that the acetic acid, mixed with sulphuric acid and the peroxide of manganese, developed no formic acid. It is not fair, then, to regard acetic acid as a formiate of carburetted hydrogen. Finally, we have acetic acid in the formula $H^8 + (C^8 O^4)$, in which case it is a hydracid, the radical of which is the oxide of carbon.* The action of chlorine on this body was what led me to regard acetic acid as constituted in

* It is an error to consider the formula $H^8 + (C^8 O^4)$ as representing a hydracid, of which the radical would be $C^8 O^4$, or of the oxide of carbon; for that we should have H^2 instead of H^8 in the formula.

this way. I filled a bottle of pure chlorine, into which I introduced a very small quantity of concentrated acetic acid. I exposed the bottle to the sun, and after fifteen to twenty minutes, the chlorine was no longer there. Small drops of a sort of oil descended down the sides. This is, in my opinion, the combination of the chlorine with the elements of the pyroacetic spirit, a combination which I at first thought to be effected only by hydrogen and carbon. The want of exactness in this process is owing to the small quantity of acetic spirit on which I was able to experiment, and which did not allow me to purify this body thoroughly.

The gas obtained by the action of chlorine on acetic acid was chloro-oxycarbonic gas, and the liquid was a mixture of hydrochloric acid and undecomposed acetic acid. This action of chlorine on acetic acid, in accordance with the manner of viewing its composition, was supported by a property of the double acetates, as with the double cyanurets. The double acetate of baryta and of iron scarcely precipitated any of this metal on the addition of ammonia, in the same way as that of baryta and of mercury. Finally, I passed a current of oxide of carbon, well purged of carbonic acid by means of caustic lime, into distilled water, in which there was suspended some very fine copper, obtained by the distillation of acetate of copper. After some time the water became blue; on filtering the solution I obtained a considerable reddish brown precipitate, with the double cyanuret of iron and potassium. I evaporated the solution, and the green salt obtained developed, by the contact of sulphuric acid, vapours which have all the characters of acetic acid. Thus confirmed in the composition of acetic acid, it remains for me to present that of the acetates. We know that in these salts the oxygen of the base is triple that of the acid. If we suppose that two volumes of hydrogen of the acid combine with one volume of oxygen of the same, we have an acetate formed according to the formula $(R + O) + (O^3 H^6 C^8)$. We might, however, regard an acetate as constituted in the following manner: $R + (O^1 H^6 C^8)$.—*Ibid.*

ANATOMY AND PHYSIOLOGY.

Experiments relative to the Action of Tartar Emetic on Ruminant Animals, read before the Royal Academy of Sciences, February 25, by M. Flourens.—In a paper read on a former occasion before the Academy, M. Flourens had established, by numerous experiments, that the vomiting of ruminant animals differs essentially from the vomiting of ordinary animals, in this respect, that instead of being, as is the latter, a confused rejection *en masse*, it on the con-

trary constitutes a rejection, which is effected only by regulated and detached portions. The object of the new paper is to shew, that these two sorts of vomiting depend on different stomachs, and thereby to arrive at the explanation of this extraordinary fact, long since observed, that those animals which regurgitate most easily vomit not without extreme difficulty, or even do not vomit at all. After adverting to the experiments in which Daubenton, Gilbert, and M. Huzard tried to produce vomiting in sheep by making them swallow tartar emetic, and having shewn that his own experiments confirmed the results previously obtained, to wit, that this substance, so administered, never produced any thing like vomiting, he announces, that he has on the contrary obtained effects as prompt and as energetic, when, instead of introducing the emetic by means of deglutition, he applied it directly to the *red* (*caillette*,) or injected it into the veins. Besides, even in this case, the substances were not thrown out.

In the first experiment, ten grains of tartar emetic, dissolved in water, were introduced into the veins. After some minutes, the animal seemed quite out of breath; soon after there appeared efforts at vomiting, which became more and more violent, and were followed each time by a sort of internal vomiting, after which the animal was for some minutes evidently engaged in re-swallowing. These efforts having lasted for upwards of an hour, never terminated, however, in complete vomiting, that is to say, in an actual and total rejection of the substances previously swallowed. The tartar emetic produced in sheep the same excitement as in other animals, and provoking efforts of a similar kind, without, however, ever bringing on vomiting. It was evident, that this impossibility to vomit must be owing to the particular disposition of the immediate organs to which this excitation is directed. The author of the memoir set about investigating, by experiment, which of the four stomachs it was on which the tartar emetic acts; and in order to observe them, he had recourse to the same process which he had employed to follow in these different phases, the act of rumination, a process which consists in effecting on each of them successively an artificial anus.

When thus observed, the first three stomachs presented nothing but the general phenomena relative to rumination, and described in the former papers of the author; but the case is not the same for the *red*. In fact, scarcely was an opening made in it when the loose and soft folds of its interior fell out, and the animal was seized with extreme difficulty of breathing, similar to that which follows the injection of tartar emetic into the veins, and which, as the latter, is accompanied with swelling of the abdomen, grinding of the teeth, froth at the mouth, and, lastly, with true efforts at vomiting, less violent, however, than those produced by tartar emetic. Here, then, is a stomach, the only one which excites and provokes nearly the same symptoms as the injection of tartar emetic into the veins; but these effects, as has been proved by the experiments of M. Flourens,

are also produced by the introduction of tartar emetic into the *red*, whilst nothing similar is produced, when the same substance is introduced directly into any one of the three other stomachs.

Twenty grains of tartar emetic have been at different times introduced by means of artificial anuses, either into the paunch, or into the bonnet, and they never produced any immediate effect; we say immediate, because its consecutive feeble effects, which were sometimes observed, depended evidently on the subsequent passage of the active substance into the fourth stomach.

As to this fourth stomach itself, when tartar emetic was introduced into it, not directly, as we have seen that the mechanical lesion produced effects similar to that which resulted from the injection of the substance into the veins, but by means of an artificial anus effected in the adjacent stomach, we always saw the symptoms already described to come on, swelling of the abdomen, grinding of the teeth, and efforts to vomit.

Having well established this point, that it is on the *red*, and the *red* alone, that tartar emetic acts, it is easy to explain, why, in these animals, regurgitation is so easy, and vomiting, on the contrary, so difficult: it is, as we have said at the commencement, because it is not by the same stomachs, that is to say, by the same immediate organs, that the two phenomena are effected. In fact, it has been seen by M. Flourens' experiments on rumination, that the two first stomachs alone concur immediately in regurgitation, whether by themselves or by the particular apparatus which they contain; and it has been just now seen, by the experiments regarding the action of tartar emetic, that it is not either on the one nor the other of these two stomachs that tartar emetic acts, but on the *red*, a stomach which does not at all concur in regurgitation.

When we examine the structure of the two first stomachs, and of the semi-canal of the œsophagus, that is to say, of the parts immediately concerned in regurgitation, we see that every thing there is disposed to facilitate this return of the aliment towards the mouth; in the *red*, on the contrary, every thing is disposed to render such a return more or less difficult. First, this stomach is last of all, so that the rejected matter, before reaching the mouth, must have to traverse the three other stomachs; then there is, at the open by which it communicates with the *feuillet*, a fold more or less marked, which, to a certain degree, performs the office of a valve, and thus more or less completely opposes the sudden exit of the matters before which it is placed. Still more, the *red*, pressed by the abdominal muscles and the diaphragm, cannot contract without the other stomachs, and, consequently, the *feuillet* also contracting; and the latter cannot contract without its upper orifice closing, as has been already proved by M. Flourens' experiments. In fine, the *red* being the softest and the least resisting of the four stomachs, it follows, that the compression of the abdominal muscles and of the diaphragm will act with much less effect on this stomach than on the others, and particularly on the two first.

Every thing, then, is disposed in ruminating animals to render the rejection of the first two stomachs easy; and, on the contrary, every thing is disposed to render the rejection of the last, that is to say, true vomiting, difficult and not impossible, inasmuch as some authors assure us that they have seen ruminant animals vomit. However, these cases, which are very rare, may give rise to two remarks; the first, is, that vomiting depended always on some disease, that is, on some alteration which might have changed the natural relations of the parts; and the second, that it is in these very cases, according to the expressions of the authors who report them, every thing shews, that it was from the paunch, and not from the *red*, that the rejected matter came, and, consequently, that it was not true vomiting, but mere ordinary rejection, though a vitiated one, of the paunch.

On recapitulating what precedes, we see—

1st, That tartar emetic produces on sheep the same general effects, that is the same excitation of all the powers which provoke or determine vomiting, as it produces on ordinary animals.

2dly, That with respect to the different stomachs of ruminant animals, it is on the *red*, that is, on the same one which alone, amidst all these stomachs, corresponds by its structure as by its functions, to the simple stomach of ordinary animals, that tartar emetic displays its action.

3dly, That it is to the particular and entirely opposite disposition of this stomach with respect to those of regurgitation that we must attribute on one side the facility which ruminant animals have in regurgitating, that is, in rejecting or bringing back to the mouth the substances contained in the two first stomachs; and, on the other hand, the difficulty which they have in vomiting, that is, in rejecting or bringing back into the mouth the substances contained in the fourth.

If it be recollected, that this fourth stomach is that where the ultimate conversion of the aliment into chyme is effected, that which contains the ruminated matters, the matters which consequently are no longer to return to the mouth, whilst the two first stomachs, on the contrary, are those where the aliment undergoes only a certain preparation, those which contain only the matters not ruminated, the matters which consequently must return to the mouth, we shall presently see why every thing must be arranged so as to render easy the rejection by the two first stomachs, and that by the fourth very difficult. Without this arrangement, in fact, the ruminated matters contained in the fourth stomach might have been constantly mixed, confounded, and brought back into the mouth with the substances not ruminated, a confusion which must be an obstacle to the accomplishment of the end which nature designed in the act of rumination.—*Julia Fontanelle, Journal de Chim. Med.*, July.

On a particular Class of Muscular Movements.—We thought it right to extract from one of our most esteemed literary periodicals, the *Revue des Deux Mondes*, a very remarkable article of M. Chev-

reul on a particular species of muscular movements. The sagacious analysis which the author has made of the phenomena which are the subject of it, his ingenious views, the consequences which he draws from the results of his examinations, are not merely of great physiological interest. We shall find there a happy application of the principles of sound, of experimental philosophy. The article is in the form of a letter addressed to M. Ampere.

“ You require of me a description of the experiments I made in 1812, to know whether it be true, as several persons assured me, *that a pendulum, formed of a heavy body and a flexible cord, oscillates when held in the hand over a certain body, though the arm be not moved.* You consider these experiments to possess some importance ; on yielding to the reasons which you gave me for publishing them, he it allowed me to say, that I had need of all the dependence which I have in your sagacity to come to the resolution of placing before the public facts of a description so different from those which I had been hitherto in the habit of submitting to it.

“ However, I am going, in compliance with your wishes, to state my observations : I shall present them in the order in which I made them.

“ The pendulum I used was an iron ring from a hempen cord ; it had been arranged by a person who was very desirous that I should myself verify the phenomenon, which displayed itself, when this individual placed it over water, from a block of metal, or a living being ; a phenomenon of which he made me a witness. It was not, I own, without surprise that I beheld it re-produced, when having myself seized with my right hand the thread of the pendulum, I placed the latter over the mercury of my pneumatic tub, over an anvil, and also over several animals, &c. I concluded from my experiments that if there was, as they assured me, but a certain number of bodies calculated to produce the oscillations of the pendulum, it might happen that on interposing other bodies between the former, and the pendulum when moving, the latter might be stopped. Notwithstanding my previous opinion, my astonishment was great, when, after having taken with my left hand a plate of glass, a cake of resin, &c., and having placed one of these bodies between the mercury and the pendulum which oscillated over it, I perceived the oscillations to diminish in extent, and to be destroyed altogether. They recommenced when the intermediate body was withdrawn, and were again destroyed by the interposition of the same body. This succession of phenomena was repeated a great many times with a truly remarkable constancy, whether the intermediate body was held by myself, or by any other person. The more extraordinary these effects appeared to me, the more I felt the necessity of verifying whether they were really foreign to all muscular motion of the arm, as had been stated to me in the most positive manner. This led me to rest the right arm, which held the pendulum, on a wooden support, which I caused to advance at pleasure from the shoulder to the hand, and to return from the hand to the shoulder. I soon remarked that in the former

case it decreased in proportion as the support approached nearer to the hand, and that it ceased when the fingers which held the cord were themselves supported, whilst in the second case, the contrary effect took place. From this I thought it very probable, that a muscular motion which occurred without my knowing it caused the phenomenon, and I could not but attach importance to this consideration, inasmuch as I had some vague recollection of having been in a very particular state, when my eyes followed the oscillations described by the pendulum which I held in my hand.

"I repeated my experiments, the arm perfectly free, and I was convinced that the recollection just now mentioned was not an illusion, for I clearly perceived, that at the same time that my eyes followed the pendulum which oscillated, there was in me a *disposition or tendency to motion*, which, involuntary as it seemed to me, was satisfied in proportion as the pendulum described greater arcs: thence I imagined, that if I repeated the experiments with the eyes covered, the results might be altogether different from those which I observed. This is precisely what happened. Whilst the pendulum oscillated over the mercury, a bandage was placed over my eyes; the motion soon diminished; but though the oscillations were feeble, they did not suffer sensible diminution by the presence of the bodies which appeared to arrest them in my first experiments. Finally, setting out from the moment when the pendulum was at rest, I held it for a quarter of an hour over the mercury without its resuming its motion, and at this time and always, without my knowledge, either the plate of glass or the cake of resin was interposed.

"This is how I interpret these phenomena. When I beheld the pendulum in my hand, a muscular movement of my own, though insensible to myself, caused the pendulum to quit its state of rest, and the oscillations once commenced were soon increased by the influence which the sight exercised in putting me into this particular state of *disposition or tendency to motion*. Now, it must be acknowledged, that this muscular movement, whilst it is increased by this same disposition, is, however, feeble enough to be arrested; I do not say under the dominion of the will, but when one has merely *the thought of trying if such a thing will arrest it*. There is then an intimate connexion established between the performance of certain motions, and the act of thought relating to it, though this thought may still not be the will which commands muscular motions. It is in this that the phenomena I have described appear to me to be of some interest in physiology, and even in the history of the sciences; they prove how easy it is to take illusions for realities every time that we are engaged in phenomena in which our organs take a part, and that in circumstances which have not been sufficiently analyzed.

"Accordingly, let me be confined to make the pendulum oscillate over certain bodies, and to the experiments in which these oscillations were arrested when glass or resin was interposed between the pendulum and the bodies which seemed to cause its motion, and certainly I could have no reason not to believe in the divining wand, or any other

thing of the same kind. Now, it will be easily conceived how men of credibility, and otherwise of enlightened minds, are sometimes induced to have recourse to ideas entirely chimerical for the purpose of explaining phenomena, which in reality do not spring from the physical world with which we are acquainted.* Once convinced that nothing truly extraordinary existed in the effects which had caused me so much surprise, I found myself in a disposition so different from that in which I was the first time I observed them, that long after, and at different periods, I tried to re-produce them, but always ineffectually.

"In calling your testimony to a fact which passed before your eyes twelve years since, I shall prove to my readers that I am not the only person on whom sight has had influence in determining the oscillations of a pendulum held in the hand. You remember, no doubt, that when at your house with General P. and several other persons, my experiments became one of the subjects of conversation; that the General expressed a desire to know the particulars of them, and that after they were explained to him, he denied not how the influence of sight on the motions of the pendulum was contrary to all his ideas. You recollect that on my proposing to him to perform the experiment himself, he was struck with amazement, when, after having put his left hand on his eyes for some minutes, and then withdrawing, he saw the pendulum which he held in the right hand absolutely motionless, though it was oscillating rapidly at the moment when his eyes had ceased to see it.

"The preceding facts, and the explanation I have given of them, led me to connect them with others which we may observe every day; by this connexion the analysis of these becomes at once more simple and more precise than it had been, at the same time that there is formed an aggregate of facts, the general explanation of which is susceptible of considerable extension. But before going farther, let us remember that my observations present two principal circumstances:

"1st. To think that a pendulum held in the hand can move, and that it moves without the individual being at all conscious that the muscular organ impresses on it any impulse: *that is the first fact.*

"2dly. To see a pendulum oscillate, and that its oscillations become more extended by the influence of the sight on the muscular organ, and always without there being any consciousness of it: *that is a second fact.*

* I can very easily conceive, that a man, whose entire attention is fixed on the motion which a rod that he holds in his hands may assume, by reason of a cause unknown to him, can receive from the slightest circumstance the *tendency to motion* necessary to develop the phenomenon with which he is engaged; for example, if this man is going towards a spring, and if his eyes are not bandaged, the view of the spacious green turf on which he walks may cause in him, without his knowledge, the muscular motion capable of disturbing the rod, by the connexion established between the idea of active vegetation and that of the water.

“ The tendency to motion caused in us by the sight of a body in motion is ascertained in several cases ; for example—

“ 1st. When the attention being entirely fixed on a bird flying, on a stone cleaving the air, on the water that flows, the body of the spectator is directed more or less towards the line of motion.

“ 2dly. When a person playing at ball or billiards, following with the eye the moveable body on which he has impressed the motion, he carries his body in the direction which he desires the moving substance to follow, as if it were possible even still for him to direct it to the mark which he wishes it to reach.

“ When we walk on a slippery plain, every body knows with what readiness we throw ourselves from the side opposite to that to which our body is drawn in consequence of a loss of equilibrium ; but a circumstance less generally known, is, that a tendency to motion manifests itself even when it is impossible for us to move in the direction of this tendency ; for example, in a carriage, the fear of being upset inclines you in the direction opposed to that with which you are threatened, and thence there result efforts so much the more painful as the fright and irritability are greater. I think that in ordinary falls, letting one's self fall (*le laisser-tomber*) has less annoyance in it than the effort to prevent the fall. It is in this way I understand the justice of the proverb, ‘ *there is a God for children and for drunkards.*’

“ The fact I have just mentioned naturally leads to the case, where being placed on the summit of a mountain, the breadth of which presents a passage much broader than would be strictly necessary if we were going along the high road, we come all of a sudden to discover the depth of an abyss placed below us. At the same moment, if I may so say, we throw ourselves irresistibly from the side opposed to the abyss, impelled by the instinct of self-preservation, which struggles against a tendency to move in a contrary direction, caused by the sight of the abyss. This tendency is still remarkable, when we are on a bridge without railing, placed over a precipice ; this precipice, viewed from one side of the bridge, makes you throw yourself towards the opposite side, and puts you in the same state of anxiety as that from which you desired to withdraw yourself. Thus distracted successively in two opposite directions, you become stupidified and motionless, if even the excessive fear of falling on the side where you are does not make you encounter the danger of throwing yourself on the opposite side. Such, in the case now before us, is the position of a man who has not been accustomed to walk on a narrow road suspended over an abyss, whilst the man who has been used to it walks as firmly as on the high road, because that being free from fear he thinks not of the danger which the former dreads. In fine, the position of the latter might become more critical still, if he were led to discover the depth of the abyss in the case, where following with the eye the flight of a bird, or the throw of a stone, &c., he had already obeyed to a certain degree this tendency which carries us towards a moving body.

“The tendency to moving in a certain direction, resulting from the attention given to a certain object, seems to me the primary cause of several phenomena generally referred to *imitation*; thus, in the case where sight, and even hearing, direct our attention to a person who yawns, the muscular motion of yawning is ordinarily the consequence. I might say the same of the communication of laughing; and this very example presents, in a very particular manner, a circumstance which seems to me strongly to support the explanation I give of these phenomena; it is, that laughing, at first weak, may, if prolonged, *become accelerated*, pardon me the expression, (as we have seen the oscillation of the pendulum held in the hand increase in extent under the influence of sight), and laughing, thus *accelerated*, may proceed even to convulsion.

“I doubt not but that the sight of certain actions calculated to make a strong impression on our feeble frame, that the recital of these same actions animated by the voice and gesture, or, still more, the knowledge which persons acquire by merely reading them, do incline certain individuals to these same actions, by reason of a tendency to motion which determines them thus mechanically to an act of which they never would have thought without a circumstance foreign to their will, and to which they never would have been led by what is called *instinct* in animals.

“The great actor is he whose gesture, and the movements of whose countenance, correspond to the movement which the sentiments that he introduces on the stage should excite in the character he represents.

“The historical painter who has studied nature seizes the position which the originals of the persons he paints should have when they concurred to the act which the pencil should re-produce.

“The great poet is he whose verses awaken in those who hear him emotions corresponding to the actions which he sings; such is the recital of a portion of the *Iliad* which impelled Alexander to buckle on his arms.

“In concluding here the exposition of the facts which appear to me to be connected with my observations, I think it right to make a remark, which is implied in what I have said, but which may escape some reader; it is this, that this tendency to movement, to which I refer the primary cause of a great number of our acts, takes place only when we are in a certain state, which is precisely that which magnetizers call *faith*. The existence of this state is perfectly demonstrated by the recital of my experiments; accordingly, as long as I believed in the *possibility* of the motion of the pendulum which I held in my hand, it took place; but after I discovered its cause, it was no longer possible for me to re-produce it. It is because we are not always in the same state that we do not always receive the same impression from the same thing; thus, the yawning of another does not always make us to yawn; laughing is not always communicated from the laugher to his neighbour. The great orator who wishes to impart to the listening crowd the passions that he himself feels,

does not arrive at his destination at once; he begins by predisposing his audience, and it is only after he has made himself master of this that he draws forth his strong arguments. The great poet, the great historian, constantly use the same artifice. They first prepare their reader to receive the final impression. Nothing is more curious, in the study of the causes which determine human actions, than the knowledge of the means employed by the merchant, first to call and then to engage the attention of the buyer to the qualities of the object which he wishes him to take; than the knowledge of the means employed by the juggler, in order to draw from the pack such a card rather than any other, or to direct the spectator's attention to some certain thing, for the purpose of distracting it from some other, a distraction without which the juggler could not cause the surprise, which is the final aim of his art. From these considerations it results, that professions the most opposite employ means altogether analogous, though exceedingly varied, to arrive at the same end, that of first securing the attention of the individual, in order afterwards to produce on him a determinate effect.

"I think that my observations are connected with the history of the faculty of animals, that there are some of their actions attributed to instinct, which enter into the class of those of which I have spoken. It is particularly in animals which live in groups that it would appear to me to be interesting to study the influence of the chiefs over the subordinate individuals. In fine, do not the facts I have stated throw some light on the cause of the *fascination* which one animal makes another experience?

"I think that my observations should also engage the attention of the physiologists, who, like M. Flourens, have examined in a particular manner the movements which supervene in animals after the removal of certain parts of the nervous system; it would seem to me to be important to appreciate the influence which the removal of such a one of these parts could effect on the developments of the phenomena which constitute the subject of this letter.

"Such are, my friend, the subjects which you have considered may be interesting to persons, who think with us that the course to be followed in physiology is that which has been traced out by the men to whom the natural sciences owe their advancement, and who share in our opinion that there are no positive metaphysics for him who is ignorant of the great truths of the physical and mathematical sciences. The study of the faculties of man is invariably connected not only with the knowledge of the means which he has employed in order to establish each of the special branches of these same sciences, but the same holds good also with respect to the knowledge of the faculties of animals. Before seeking to draw up a general system of philosophy, we must collect as large a number, as is possible, of groups of analogous facts; and, besides, it is necessary that the facts of each group be previously examined into with particular study.

"E. CHEVREUL."

PATHOLOGY AND THERAPEUTICS.

Double Vision with one Eye.—M. Prevost, the distinguished professor of Geneva, and Mr. Babbage, are annoyed with this irregularity of vision. Whenever they look at an object, without straining their eyes, they see two images, one situated above the other. In the case of the latter philosopher, the upper image is more faint and indistinct than the lower, or true one, and they are separated by an angle of 12 degrees. When his health is deranged, the upper or false image becomes more distinct, but the angle of separation is not changed. In consequence of the smallness of this angle, the image is not ordinarily seen quite double, but there is rather a confused border perceived round the real object; when he looks through any small aperture, the feeble image disappears, and the same effect is produced by inclining the head backwards, and directing the sight somewhat under the eyelid; also by contracting the eyebrows, or by using a concave lens.

The affected eye of M. Prevost sometimes sees three images of the same object, one above the other. He readily ascertained that the highest image corresponded with the most inferior picture on the retina, by moving slowly a screen before his eye, from above downwards; he thus observed that the inferior image disappeared before the other, and, as it faded, the upper one became more distinct. Sometimes he could hide the images by the eyelids, the upper image by the lower lid, and the lower image by the upper lid. M. Prevost was at first much annoyed by this double vision, for when he was reading, the "o" always seeming "8," &c. By using a convex lens, he found that, by using it at a certain distance from the eye, only one image was seen, but it was surrounded with a light shade; when the glass was withdrawn further, the two images returned, and the same took place when it was brought very near to the eye; but, in the latter case, the images were seen side by side, and not the one above the other. M. Prevost is of opinion, that, in such cases of double vision as his own and that of Mr. Babbage, the crystalline lens is chiefly at fault, so that it becomes a double refractor; this condition may be induced by a fracture, bruise, a partial flattening of its surface, or by a separation of one of its layers. The effect of a fracture is readily witnessed in a glass lens; for, if broken, we at once perceive two images. Dr. Wollaston attributed to this cause his own defect of vision, and found that the error was for the time corrected, by looking through the refracting angle of a prism steadily at the object. It is not necessary that the lens be actually broken: one of its segments or laminae may be somewhat displaced and irregularly inclined, and thereby the double refraction may be caused. In the memoirs of Dr. Holyoke, who died at the age of 100 at New Jersey, in 1829, it is stated, that, for several years, all objects were quadru-

pled or quintupled ; when he looked, for example, at the moon, he saw five moons.—*Medico-Chirurgical Review*.

M. Pigeaux on the Cause of the Sounds of the Heart, and his Refutation of Majendie's Theory.—This is a very valuable paper, and will amply repay the study of all auscultators. We regret that we cannot afford room for a more extended analysis. M. P. says that he was first led to doubt the accuracy of Laennec's explanation on acoustic principles. He found that no contraction, however quick and energetic, of the hand when plunged in any liquid, ever produced any sound ; but that if, on the contrary, he jerked a small jet of water against the walls of a metallic vessel, sounds, varying in intensity and timbre, and somewhat akin to those of the heart, were caused ; again, when he tied the neck of a bladder filled with water to one of the orifices of the heart, and squeezed the bladder in jerks, he could still more closely imitate the normal sounds of the heart. He performed many experiments on frogs, lizards, and snakes, and satisfied himself that the succession of the systole and diastole, both of the auricles and of the ventricles, is uninterrupted, and therefore, that there is no appreciable period of repose ; that the ventricles only, and not the auricles, empty themselves completely during their systole ; and that the contraction and dilation of the auricles are performed less quickly than the corresponding action of the ventricles. Pathology taught him that the morbid sounds, viz., the bellows, saw, and rasp sounds, are caused by the vibrations of the valves, in consequence of the friction of the stream of blood, and that all the modifications of the clear sound are invariably associated with certain changes in the state of the large vessels.

The following propositions contain a summary of his opinions :
 1. The circulating fluid is the immediate cause of the sounds, which have hitherto been attributed to the contraction of the cavities of the heart. 2. The shock or friction of the blood against the parietes of the vessels which it permeates, occasions vibrations, which give rise to the sounds. 3. The intensity of the sounds is proportional to the force of this impulsion ; the organization of the parts which enter into vibration determines the timbre or tone. 4. The contractions of the cavities of the heart are only the mediate cause of this phenomenon, which is also coincident with, but not occasioned by the dilatation of these cavities. 5. The movements of the heart, considered by themselves, are quite "aphonic ;" the fact of the interposed periods of silence between the different sounds is a proof of it. 6. When the blood enters the auricles, it dilates them without any murmur. 7. Driven into the ventricles, by the equally noiseless contraction of the auricles, the blood impinges upon the walls of a cavity, which, closed at its exit, enters into vibrations, and occasions the first or dull sound, or, as it ought rather to be called, the inferior sound. 8. The time of the first repose, or rather of the first silence, is the instant of the systole of the ventricles. 9. The second, clear, superior, or upper sound follows immediately, and is occasioned by

the collision of the blood against the walls of the aorta and of the pulmonary artery. 10. The period of the second silence, or as it is called by Laennec, the period of the repose of the heart, is equal to the difference of the time which is occupied by the clear sound on the one hand, and by the dilatation and contraction which are aphonic of the auricles on the other.—[This last proposition is very obscure.—Ed.]

The theory of M. Majendie is very different from the preceding; he maintains, in a memoir recently read before the College of France, that the two sounds of the heart are owing to the successive impulses of the apex and of the base of the heart against the walls of the chest; that the diastole and dull sound are synchronous, and that the systole and clear sound are also synchronous; and that if fluid be artificially injected into the pleuræ, and thus prevent the shocks of the heart against the ribs, the sound can be no longer heard. But this theory is at once proved to be insufficient and erroneous, by the fact that the sounds of the heart can be heard distinctly, after the sternum and ribs have been removed. Numerous experiments set this beyond doubt. Moreover, no explanation can be given of the morbid bruits or murmurs, on the above theory. In all our inquiries on the cause of the cardiac sounds, it is of great importance, says M. Pigeaux, to remember that the exact points of the maximum of intensity of each are separated, or apart about three inches from each other.—*Medico-Chirurgical Review*, July, 1833.

Researches on the Conium Maculatum, by Professor Fodéré.—It has been frequently disputed, whether it was really this plant which the Athenians used for state poisoning, as in the case of Socrates. The description left us, in the dialogue of Plato with Echecrates, who was present during the last hours of the sage, is as follows: After drinking the fatal cup, he kept walking about the room for some time, till he felt his limbs grow heavy: he then lay down on his back; the executioner went up to him and pinched his feet, asking him whether he was sensible of it. Socrates answered, "no." The numbness and loss of feeling extended up the legs and thighs, which became gradually stiffened and cold; the belly was soon similarly affected, and when the coldness reached the heart, life was immediately extinguished. Just before his death, he took off the cap from his head, and said to Crito, "we owe a cock to Esculapius, forget not to discharge the debt." Shortly after these words he was convulsed: his features became fixed, and the dismal scene was closed.

Now, no medical man could very satisfactorily assert, that the preceding description could lead him to ascribe the poisoning to the common hemlock; and M. Fodéré, till very lately, confessed that it must be considered as very uncertain what was the herb which had been used. His recent experiments have, however, satisfied his mind that it was in truth the conium. The beautiful memoir of M.

Geiger, of Heidelberg, in 1832, has thrown much light upon our inquiries. He has found, that the active principle, which he denominates cicutine, is an alkaloid, in itself volatile, but fixed in the plant by a peculiar acid; that it is of an oily consistence, has a sharp, very penetrating, and offensive smell, resembling that of a noxious urine, is acrid to the taste, like tobacco, and is soluble in water, alcohol, and æther; that besides this principle there is another, equally volatile, having the ordinary smell of the plant, but which is perfectly innocuous; that the cicutine can be obtained only from the fresh plant; and that it becomes decomposed even in the extract prepared from the recent plant, after six weeks' keeping; that a third of a drop killed a pigeon, and that a dog, to which eight drops had been given, soon began to totter, then fell down, vomited, and died in about six minutes, after being violently convulsed.

Professor Fodéré has repeated M. Geiger's experiments, and has simplified considerably the process to obtain the active principle of the poison; he finds that it exists in the plant, as a subconiate of cicutine. We cannot afford space to give the particulars, and therefore recommend to such of our readers as are interested in pharmaceutical operations to consult the paper itself in the 173d number of the *Journal Complementary des Sciences Medicales*. He gave six grains of the cicutine to two strong rabbits, they soon began to totter, the pupils became dilated; they yawned and fell into a deep sleep; in about half an hour they awoke, and seemed to have recovered from the effects of the poison. These results prove, that cicutine has sedative and narcotic qualities nearly equal in activity to those of morphine, but very inferior to those of strychnine, two grains of which are sufficient to kill a rabbit very speedily, whereas ten, and even fifteen grains of acetate of morphine have been given, and stupor only was induced. To try the effects of a full dose of cicutine, Fodéré gave one rabbit twenty grains; the animal became immediately convulsed, seized with tetanus, and this was quickly followed by a general stiffness; the pupils were at first dilated and then contracted; death took place in the course of two minutes. Now, by attending to these phenomena, we can easily trace the analogy between them, and the circumstances of the death of Socrates. The numbness and stiffness, mentioned in Plato's dialogue, were doubtless the tetanic rigidity observed in the above experiments, and the stupefaction of all the senses and functions, the fixed look, and the convulsions, correspond in both cases; and if we were to regard the last injunction of the sage respecting the sacrifice to Esculapius, as the ravings of delirium, we should probably be right, especially as his condemnation was in fact awarded for the very opposition he had always shewn to the superstitions of his country. If hemlock was indeed the poison employed, the dose must have been considerable; probably eight ozs. at least of the juice.

We shall only advert to one topic more: it has been already observed, that the cicutine could be obtained from the fresh plant, but

not from dried specimens, nor from old extracts. This shews the importance of preferring the recent herb on all occasions, when we wish to employ conium medicinally. So inert is the extract sometimes, that it has been given in the dose of an ounce, without producing any very obvious effects; but as we cannot always have the fresh plant, it is an object of great consequence to contrive a plan by which a really active preparation may be had and preserved. Fodéré suggests, that the method pursued by many of the German chemists is the best; namely, by preparing an extract by means of an hydraulic press; and he has already ascertained, that when so procured, it retains perfectly the peculiar smell of the fresh plant.—*Ibid.*

Efficacy of Iron against Chlorotic Gastralgia.—MM. Bonnet and Trousseau have reported several interesting cases, in which severe and obstinate pains in the stomach, occurring in females affected with amenorrhœa, leucorrhœa, or similar uterine affections, have yielded to the judicious employment of subcarbonate of iron, after most other means of treatment have failed. As the first case is a good illustrative specimen of the author's views, we shall give an abridged statement of it.

A. B. aged 21. She had enjoyed almost uninterrupted good health till her sixteenth year, when the catamenia first appeared. Since that period, she has been sometimes regular, sometimes not so, and has suffered much from head-aches and general indisposition. In the beginning of 1829, she first experienced symptoms of gastralgia; the pain she compared to a weight, and sometimes to a pinching—it was always worse after eating, especially animal food. At first it was not very severe, and came on only at intervals of several days; but gradually it became worse, and returned almost every day or two. A physician prescribed leeching of the epigastrium and demulcent drinks—flesh, fruits, and vegetables were permitted, but wine and coffee interdicted. The distress was relieved for some time under this treatment, but, in the course of a month or so, it returned with aggravated violence; at last she suffered so much after every repast, and even after a single spoonful of food, that she almost starved herself. The physician considered that there was chronic gastritis, and even suspected cancer of the pylorus. The patient was exceedingly wasted, but retained her wonted cheerfulness. MM. Bonnet and Trousseau were consulted at this period; they inquired what description of food seemed to cause least pain; she told them boiled or stewed fruits, prunes, &c., but that all such articles had been inhibited by her medical attendant. She was now permitted to take them, and the following pills ordered: take of carbonate of iron, extract of succory, equal parts, and divide into pills of six grains each; the dose was at first only one night and morning, and gradually increased to eight or ten at a time. In twenty days she was almost completely cured. The iron was continued for two or three months.—*Ibid.*

Insalubrity of Paris.—A commission of health was lately appointed to inquire into the causes of the great unhealthiness of the quarter of St. Martin in Paris. Its situation is low-lying, and a great part is not above the level of the Seine; the soil on which it is built is therefore alluvial and excessively damp; there are moreover some manufactories, such as those of "poudrette" (human dung reduced to powder as a manure) which must inevitably be injurious to the residents; there is the canal of Saint Martin, constantly giving out its malarious miasmata; there is the densely crowded state of the buildings, the huddled together population of the lowest classes of society, living in rooms or hovels where they have scarcely air to breathe; besides, this air is infected with the most noxious and abominable effluvia from the disgraceful condition of most of the privies and necessities, private as well as public; they have been so constructed as to permit the escape of the urine and much of the fluid filth, (which thus runs down in the kennels of the streets,) in order to save the expense of frequent cleanings; and many are situated close to, and alongside of the wells, which afford the water that is drunk by the inhabitants: various plans have been suggested with the view of obviating this disgusting state of things. In our opinion by far the best would be, a police order to shut up all deep privies or "fosses," and to substitute in their place "sieges," fitted with removeable reservoirs, on the plan of the portable water-closets, or of Chaumette's apparatus. Some have asked, why is Paris not provided with drains and sewers, as London is, to carry off into the Seine, as into the Thames, all the "immondices?" but it seems to have been forgotten, that the topographical position of the one city is very different from that of the other, and that the Seine cannot be properly compared with the Thames; and even supposing that sewers might be conveniently made, we deem them unnecessary in many respects; for surely the "immondices" of a city were never destined to infect and pollute the waters of a river; but they should rather be used to enrich and fertilize the earth; a system of sewers may therefore be fairly objected to, as injurious not less to the hygienic than to the agricultural interests!—*Ibid.*

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PART I.
ORIGINAL COMMUNICATIONS.

ART. VII.—*On the Loss of the Faculty of Speech depending on forgetfulness of the Art of using the Vocal Organs.*
By JONATHAN OSBORNE, M.D., &c. &c.

THE power of recollecting names is well known to be possessed in unequal degrees by different individuals. We all have, on various occasions, experienced a difficulty or impossibility of recalling the name of some person passing us in the street, although not only the countenance, but also the circumstances of time, and place of former acquaintance, were deeply engraven on the memory. Some experience an inability of remembering some one name, although capable of retaining others to an indefinite extent. Thus it is related, that Manjeti could never recollect the name of the *anagallis arvensis*, although he annually demonstrated that plant, in his course of Botanical lectures. In learning languages, some words are retained at once, while others can with difficulty be acquired, even with the most persevering repetition. Those instances are, for the most part,

to be referred either to defective attention, or to a want of that chain of association, on which memory is known to depend. Both in health, and under the influence of disease, we find the most common failures of memory amongst nouns, and especially amongst proper names, in consequence of their being less frequently repeated than verbs or prepositions, which, being in use on every topic which can form the subject of discourse, are retained, when the names of general topics, as nouns or of individual topics, as proper names, are forgotten.

There are two kinds of loss of memory of language ; the first, which is usually connected with softening of some portion of the brain, and is most frequently witnessed in advanced age. This is characterized by an imperfect recollection of dates and names, of places and persons ; but as far as the muscular powers of articulation have not been impeded by paralysis, the faculty of language remains unimpaired, and the individual speaks with his usual facility, until all the faculties become involved in the disease, and total fatuity is the result.

The other imperfection, and that which it is proposed to illustrate in the following pages, involves language in all its parts nearly in an equal degree, except in the slighter forms, when proper names, or other words of less frequent occurrence, are alone affected. It does not consist in want of recollection of the word to be pronounced, but in a loss of recollection of the mode of using the vocal apparatus, so as to pronounce it. This peculiar affection comes on during all ages : although appearing to arise from disease of the brain, or of some part thereof, yet it is not necessarily the precursor of any more serious affection, being sometimes transitory, while in other cases it exists unaltered for an indefinite space of time. The first case which came under my observation, was that of a young lady, 12 years of age, whom I attended with the late Dr. Brooke. She laboured under a severe and tedious gastro-enteritic fever. About the sixth day she lost the faculty of speech, yet continued perfectly sensible, and shewed, by her actions, that she understood every word

that was spoken to her. She was an expert writer, and accepted with avidity the offer of materials for writing: when paper and a pencil were placed in her hands, she made several attempts to write, but was obliged to relinquish the undertaking before a single sentence was completed. This state lasted about five days, at the end of which time her speech suddenly returned, and she shortly afterwards became convalescent, and recovered. The second case was that of master B. aged 7, whom I attended in a gastro-enteritic fever, in conjunction with Dr. Cheyne. In the progress of the fever, he gradually ceased to speak, and remained quite dumb for above a week: during this time he shewed that he understood all that was said in his hearing, did every thing which was required, and made repeated attempts to speak. His speech returned gradually, and after a tedious convalescence, he recovered. Dr. Cheyne, on this occasion, informed me, that he had seen another case of loss of speech without delirium or stupor, in a child under gastro-enteritis, which, after continuing above a week, ended favourably. In those two cases it is to be observed, that after recovery, the patients could give no account of what had happened during their illness; but as this is a common occurrence in fevers, even when the sensorium is not perceptibly disturbed, it affords no evidence against what has been stated, respecting the integrity of their intellects, during the deprivation of the faculty of speech.

The third case was that of Robert Delany, admitted into Sir Patrick Dun's Hospital, 2nd March, 1830, with paralysis of the right arm and leg, in consequence of an apoplectic seizure, which took place above a month previously. He shewed by his actions, that he perfectly comprehended every thing that was said to him. When asked a question, he always endeavored to give an answer, but could only say, *bon te utt* and a few other monosyllables, but no words of more syllables. He used to laugh as in health, and often seemed much amused at his ineffectual attempts to express himself. His mouth was drawn to the left side, the entire head inclined slightly to the right, and

when he put out his tongue, it was protruded towards the right. This latter circumstance, however, does not interfere with speech, as we have daily opportunities of witnessing in paralytic cases. And in his mode of utterance, there was not the difficulty and thickness of enunciation belonging to paralysis, when it affects the vocal organs, in which, although the indistinctness of the consonants often renders the whole unintelligible, yet it is evident that the vowels are correctly pronounced, and the number of syllables correctly given.

The fourth case, and that to which I am most desirous to call attention, is that of a gentleman of about 26 years of age, of very considerable literary attainments. He was a scholar of Trinity College, and has been a proficient in the French, Italian, and German languages. About a year ago he was residing in the country, and indulged the habit of bathing, in a neighbouring lake. One morning after bathing, he was sitting at breakfast, when he suddenly fell in an apoplectic fit : a physician was immediately sent for ; he was bled, and after being subjected to the appropriate treatment, he became sensible in about a fortnight. But although restored to his intellects, he had the mortification of finding himself deprived of the gift of speech. He spoke, but what he uttered was quite unintelligible, although he laboured under no paralytic affection, and uttered a variety of syllables, with the greatest apparent ease. When he came to Dublin, his extraordinary jargon caused him to be treated as a foreigner, in the hotel where he stopped, and when he went to the college to see a friend, he was unable to express his wish to the gate porter, and succeeded only by pointing to the apartments which his friend had occupied.

After he came under my care, I had ample opportunities of observing the peculiar nature of the deprivation under which he laboured ; and the circumstance of his having received a liberal education, enabled me to ascertain some peculiarities in this affection, which would not otherwise have come to light. They were as follows :

1st. He perfectly comprehended every word said to him ; this was proved in a variety of ways unnecessary to describe.

2. He perfectly comprehended written language. He continued to read a newspaper every day, and, when examined, proved that he had a very clear recollection of all that he read. Having procured a copy of Andral's Pathology in French, he read it with great diligence, having lately intended to embrace the medical profession.

3. He expressed his ideas in writing with considerable fluency, and when he failed, it appeared to arise merely from confusion, and not from inability, the words being orthographically correct, but sometimes not in their proper places. I frequently gave him Latin sentences, which he translated accurately. He also wrote correct answers to historical questions.

4. His knowledge of arithmetic was unimpaired. He added and subtracted numbers of different denominations with uncommon readiness. He also played well at the game of drafts, which involves calculations relating to numbers and position.

5. His recollection of musical sounds I was not able to ascertain, not knowing the extent of his knowledge of music before the apoplectic seizure ; but he remembered the tune of " God save the King," and when " Rule Britannia" was played, he pointed to the shipping in the river.

6. His power of repeating words after another person was almost confined to certain monosyllables ; and in repeating the letters of the alphabet, he could never pronounce *k*, *q*, *u*, *v*, *w*, *x*, and *z*, although he often uttered those sounds in attempting to pronounce the other letters. The letter *i* also he was very seldom able to pronounce.

7. In order to ascertain and place on record the peculiar imperfection of language which he exhibited, I selected the following sentence from the By-laws of the College of Physicians, viz. "*It shall be in the power of the College to examine or not examine any Licentiate, previously to his admission to a Fellowship, as they shall think fit.*" Having set him to read

this aloud, he read as follows: "*An the be what in the temother of the trothotodoo to majorum or that emidrate ein einkrastrai mestreit to ketra totombreidei to ra fromtreido asthat kekritest.*"

The same passage was presented to him in a few days afterwards, and he then read it as follows: "*Be mather be in the kondreit of the compestret to samtreis amtreit emtreido am temtreido mestreitereso to his eftreido tum bried rederiso of deid daf drit des trest.*"

We observe here several syllables of frequent occurrence in the German language, which probably had made a strong impression on his memory; but the most remarkable fact connected with his case was, that although he appeared generally to know when he spoke wrong, yet that he was unable to speak right, notwithstanding, as is proved from the above specimen, he articulated very difficult and unusual syllables, and was completely free from any paralytic affection of the vocal organs.

A similar case occurred last year in Stevens' hospital, which has been described in the Dublin Medical Journal by the Surgeon General. In consequence of a sabre wound received on the top of the head, portions of the brain came away, and the patient, although sensible, and able to resume his ordinary avocations, yet was deprived of the faculty of speech. This peculiar state is in these observations described as arising from a loss of the memory of names, while the memory of things remained unimpaired. Both in this case, however, and in that which I have last related, it is to be particularly observed, that the patients understood every thing that was said, a circumstance utterly inconsistent with the supposition, that they had lost the recollection of names, and in my case it was an absolute impossibility that this gentleman should write translations of Latin sentences, if the memory of names was lost. The recollection of things can only be the recollection of previously received sensations. It is obvious that those were retained, it is also obvious that the recollection of the meaning of words was

retained, and it now remains to be inquired, wherein does this peculiar imperfection of language consist?

Memory is engaged on two great classes of objects: the first comprising all the sensations which have been received by the individual; the second, the actions which he has become capable of performing by means of his voluntary muscles. The sensations received, either by external impressions, or by reflection on ideas thence derived, constitute the stock of knowledge possessed by each individual. All the facts, circumstances, languages, proper names, sensible qualities of bodies, scientific propositions, judgments, or prejudices respecting individuals, which are retained in the memory, are there, as it were, lodged in a store, forming a possession, of the extent of which the owner is not at any time conscious, except by recollecting that on former occasions he has drawn them forth, and believes that it is in his power to do so again. The number of those recollections is, even in the most ignorant, beyond all powers of calculation. As they hang together by association, and can be revived only by this kind of connexion, it follows, as a necessary consequence, that the memory is not immediately subject to the will of the individual, who frequently is disappointed in his endeavours to excite a train leading to the idea he seeks. The memory being thus in an independent state, we are obliged, in order to reduce it into subjection, to contrive systematic arrangements and other means, which, by multiplying chains of association, enable us to penetrate into and select the contents of this store, according as they may be required.

The second class of objects of recollection, is that of the actions of our voluntary muscles. The importance of this knowledge immediately on birth, has required that instinct should be granted. The chicken, on extricating itself from the egg, is able to feed itself, and the new born infant is also able to suck; the latter operation requiring a vacuum to be formed, by withdrawing the tongue from the front to the back of the mouth, in a way which some, at a later period of life, find difficulty in ac-

complishing. The great majority of muscular actions, however, have been learned by education : the art of walking is acquired by imitation, and the progress made is very gradual. In acquiring language, after understanding what is spoken, the next attainment is, by imitation, to pronounce the most necessary monosyllables. Grammatical inflections are the longest to acquire, because the child is obliged, from experience alone, to form rules for both declensions and conjugations, and children always continue to use regular forms for irregular nouns and verbs, until better instructed by exercise and observation.

After the art of speaking, the art of writing occupies the most important place, and during the years of childhood, a constant practice is continued, by which, from the first formation of letters, we advance, till at length we are able to set down whole sentences, with a rapidity almost equal to that of thought. Other muscular actions, such as leaping, dancing, riding, fencing, are acquired by practice alone ; even the art of playing on musical instruments, requires, not so much a knowledge of the theory of their performance, as that the muscular apparatus shall be trained to execute actions in a certain order of succession, and in a space of time so short, that they can only receive the first impulse of the will, and must be able of themselves to carry on the series of actions which has once been commenced. To illustrate this chain of associations in certain systems of muscles, we may refer to a musician, who happens to commence the first few notes of a tune which was before forgotten, but having made the commencement, he is now able to continue it in way which excites his own astonishment : or a fluent speaker delivering an extempore discourse, while he is in the act of uttering one sentence, he is necessarily engaged in thinking on the next. He must therefore have the faculty of setting the machinery of speech to the beginning of the sentence, trusting to the peculiar memory depending on associate objects for its continuance, and releasing himself from the care of pronouncing the individual syllables of which it is composed. The memory of mus-

cular action resembles that of sensation in being in a great measure passive, and dependent on association, and is excited by performing those motions which have habitually preceded it.

When we reflect on the number of words in any language, with their grammatical inflections, and consider that each of those requires for its pronunciation, a certain definite action of the muscular apparatus of the organs of speech, it appears almost impossible that we should recollect all the minute particulars necessary for working the machinery of the vocal apparatus, so as to produce such varied effects ; and yet all, even in childhood, acquire the art of working this apparatus, and retain it so strongly, that it does not slip from the recollection, even when old age brings on loss of memory along with its other infirmities. It is the loss of this peculiar art, which characterises the affection now before us. In the case of stammering, it is obvious that the patient knows the mode in which the word is to be pronounced, inasmuch as he sounds the first letter of it, but that he is prevented from finishing it by debility or spasm on the part of the muscles, causing them to resist his efforts. In my patient, on the contrary, the word which he could write, and the meaning of which he knew perfectly, he was unable to commence the first syllable of, and instead of it, uttered words compounded from foreign languages. His ear afforded him very little assistance, as his attempts to repeat what had been read were scarcely better than his reading. The organs were not paralysed, neither were they affected by spasm, nor was he ignorant of the sounds to be uttered ; it only remains then, that he must have been ignorant of the art of producing those sounds, and as he was previously in possession of this art, we are justified in asserting that he forgot it.

The question now occurs, why should he have forgotten the art of speaking, while he retained the art of writing. Writing is performed by combinations of only twenty-four letters, by which all articulate sounds are expressed. In speaking there must be a separate motion of the vocal organs for each syllable or combination of letters, and the more those syllables

resemble each other, the more delicacy is required for their distinct pronunciation. The combinations of syllables introduce difficulties, arising from the new position which the parts are forced to assume in changing from one to another, and to these are to be added, the peculiarities of accent and quantity. Thus, speaking appears to be more complex and difficult than writing. The chief cause, however, of our patient being deprived of the one faculty and not of the other, is evidently this, that the nerves concerned in the muscular apparatus of speaking, proceed from the brain and highest portions of the spinal chord, and are consequently liable to be disturbed by apoplectic seizures, or other cerebral affections, while the nerves concerned in writing, being derived from the cervical plexus, are unaffected, except by such causes as may produce paralysis.

There is in the *Ephemerides Curiosæ* a case which strikingly shews, that the art of writing is less liable to be forgotten than that of speaking. A man, 65 years of age, in consequence of apoplexy, could not read, or even distinguish one letter from another, but if a name or phrase was mentioned to him, he could write it immediately with the strictest orthographical accuracy. What he had thus written, he was incapable of reading or distinguishing, for if asked what a letter was, or how the letters were combined, it became evident that the writing had been performed only by custom of writing, without any exercise of the judgment. In this case, none of the means which were employed were successful in restoring the knowledge of letters.

In the first case mentioned in this paper, there was inability of writing, but it will be recollected, that this occurred during the height of a gastro-enteritic fever. Febrile excitement of the muscles causes frequently an inability even to sign the name, although the intellects remain undisturbed. The loss of the memory of performing muscular action, by which the art of working a certain apparatus is lost, appears to occur almost exclusively to the organs of speech. Hence, while we have many instances of persons pronouncing one word when they intended

another, we have no instance whatever of an individual running when he wished to stand, or leaping when he wished to sit down.

In either paralytic or spasmodic affections of the limbs, it is evident that the patient is prevented from executing the required motions, by actual inability of procuring the necessary muscular contractions. But except in as far as he is thus prevented, he performs the required motion, and performs no other. The contrary takes place in the affections of speech, to which we have directed our attention, in which the effect produced is altogether and in every part of it, different from what was intended.

The lesion of the brain which produces this affection appeared, in two cases, to be situated near the vertex. The first was the case which occurred in Steven's Hospital, described by Mr. Crampton, and already alluded to. The wound was inflicted by a sabre, on the most convex portion of the parietal bone ; it was about five inches long, and penetrated into the brain. The second case was that of a French soldier, who, at the battle of Waterloo, was struck by a bullet, at the exterior of the forehead, 6 or 8 millemetres from the left eye-brow, and in the point corresponding to the curved line in the temporal fossa. He fell senseless, and remained two days and nights on the field of battle. He was conveyed to Brussels, and although many attempts were made to extract the ball, they proved fruitless. Bleeding, however, and other remedies, were adopted, to remove paralysis of the side, and other symptoms of compression which had set in. After some months he was received into the military hospital at Paris : the wound, on examination, presented an inflamed circumference, and in the centre, the ball was imbedded into the substance of the os frontis to that depth, that the half of it must have projected into the cranial cavity. In some time he was able for active service, but *never recovered the memory of proper names and of some substantives*, although all his intellectual faculties were unimpaired. He died of phthisis, and M. Larrey, who related the case at the Academy of Medicine, exhibited the skull, with the ball firmly fixed in the above men-

tioned place, the internal table of bone having been fractured and forced inwards at the moment of the accident.

M. Bouilland (*Traite de l'Encephalite*) has endeavoured to establish, that loss of speech is connected with injury of the anterior lobe of the brain. Lallemand, (*Lettres sur l'Encephalite*, lett. vi. p. 446,) however, describes one case in which there was softening, not in the anterior lobe, but in the inferior part of the middle lobe, corresponding to the optic thalamus and corpora striata; and another, in which there was considerable alteration of the anterior lobe, yet without the slightest alteration of speech. I regret that I am not able to bring forward a dissection of any case, sufficiently clear from complication with other affection, to lead to a decision on the subject. The peculiar affection which we are considering does not appear to be indicative of danger, as long as the intellects remain in their ordinary state, and as long as the individual remains free from fresh accessions of disease.

With regard to the prognosis of this affection.—Taken by itself, it evidently does not denote any fatal change to have occurred in the brain, and in this respect is less formidable than the insidious, but progressively increasing loss of memory of dates and names, which comes on at the decline of life, accompanied with partial paralysis of the limbs, and which is almost always the result of softening of some portion of the brain, with a tendency to increase. In the two first of our cases it ceased, along with the gastro-enteritic fever, to which it had supervened. The progress of the third case I am unable to state, but in the fourth case, not only has the general state of health been much improved, but I am able to report a very decided proficiency in the art of speech attained, when I made examination about four months ago. On repeating the same by-law of the College of Physicians before mentioned, after me, he spoke as follows: *It may be in the power of the College to exhaveine or not, ariatin any Licentiate seriously to his amission to a spolowship, as they shall think fit.* More lately he has repeated the same by-law after me perfectly well with the excep-

tion of the word power, which he constantly pronounced *prier*. He also was able to repeat all the letters of the alphabet, except *d*, *k*, and *c*.

The treatment in this case was first directed to combat the apoplectic tendency, which appeared to continue some time after he was placed under my care. Repeated applications of leeches, a succession of blisters to the nape and occiput, mercurial purgatives, and shower-baths every morning, were the principal means employed, until this tendency appeared to be entirely removed. Although this improvement took place, yet it was not accompanied by any restoration of speech, and his nervous susceptibility, and dread of ridicule, which caused him to maintain a perpetual silence, precluded all hope, that in the ordinary intercourse of society, he might, by practice, recover what he had lost. Therefore, having explained to him my view of the peculiar nature of his case, and having produced a complete conviction in his mind that the defect lay in his having lost, not the power, but the art of using the vocal organs : I advised him to commence learning to speak like a child, repeating first, the letters of the alphabet, and subsequently words, after another person. This was a very laborious occupation : at times he was able to pronounce syllables and words, which at other times he found impracticable, and he frequently laboured ineffectually to pronounce words, which he would pronounce when endeavouring to pronounce some entirely different word. The result, however, has been most satisfactory, and affords the highest encouragement to those who may labour under this peculiar kind of deprivation ; there being now very little doubt, if his health is spared, and his perseverance continues, that he will obtain a perfect recovery of speech.

Several cases are recorded, of persons after wounds, or apoplectic seizures, ceasing to speak their usual language, and resuming the use of some language with which they had been familiar at some former period. Those appear to be of the same nature as the present case ; the recollection of one language and its train of associate actions, being lost, it was most proba-

ble that the vocal organs should move in that train to which it had formerly been accustomed, and fall into the use of another language. It is highly probable that a similar occurrence would have taken place in our patient, if he had only cultivated one language beside English, but having been conversant with five languages, the muscular apparatus ranged about amongst them in such a manner, that the result was the kind of polyglot jargon which we have endeavoured to describe, and which, being formed without any rule, was inconsistent with itself, and wholly unintelligible.

ART. VIII.—*Case of Puerperal Peritonitis*. By JAMES PATTERSON, M. D., Edinburgh.

MARY KING, æt. 22, unmarried, of a good constitution, but not of a plethoric habit of body, was delivered by me of her first child, after a tolerably easy, and perfectly natural labour, at 2 o'clock, on the morning of Monday the 8th of October last; she took some gently laxative medicine on the following morning, and expressed, when I saw her at 12 o'clock, great delight at the prospect she had of so good a recovery, as her sister, who had recently been a patient of mine, was not able to leave her bed for some weeks after her confinement. On Wednesday I was prevented by unavoidable circumstances from visiting her in the early part of the day, but having learned, on returning to my own house at 11 o'clock in the evening, that her mother had been twice inquiring for me, and had left, on the last occasion, a very urgent request that I would call as soon as possible, I lost no time in waiting upon her; I found her in a very restless and agitated state, and complaining of intense pain all over the abdomen. Her face was covered with a clammy perspiration, and her countenance was expressive of the most intense agony. Her cries were to be heard distinctly in the street, and so loud and melancholy were the expressions of her suffering, that the policemen of the station insisted upon

being admitted into the house, to ascertain if she was receiving harsh treatment from any of her relatives ; she could not bear the slightest pressure upon her abdomen, and earnestly requested that I would not touch her. The weight of the bed-clothes was even distressing to her, and she endeavoured by her position to guard against this source of inconvenience as much as possible. This state of extreme tenderness was general over the whole of the abdomen, and prevented me from ascertaining the state of the uterus through the abdominal parietes. Her breasts were distended with milk, but the lochial discharge had not yet made its appearance. She had no headach, nor did she complain much of thirst, or express any very urgent desire for drink of any kind, though her tongue and mouth were dry, parched, and very rough to the touch. Her skin was extremely hot, and with the exception of her face, which was bedewed with a clammy moisture, was dry and harsh : she had no vomiting, nor any tendency to it. Pulse 130, full and bounding. Bowels had been freely moved in the morning without medicine. Breathing short, hurried, and performed entirely without the aid of the abdominal muscles ; was lying on her back with her knees drawn up nearly to her chest.

She attributed the present attack, which commenced with a severe rigor at 2 P. M., to the exertion which she used that morning in washing and dressing her infant. She had several severe rigors during the afternoon, and all her symptoms had been rapidly and gradually progressing since the commencement of the attack. Had taken nothing since breakfast but a drink of warm gruel, and had been applying warm fomentations to the abdomen.

I immediately bled her to $\frac{3}{4}$ xxx, without much relief to her symptoms, but the occurrence of syncope prevented me from abstracting a larger quantity of blood. I gave her half a drachm of the sedative solution of opium, and administered a large purgative enema. I directed the warm fomentations to be continued to the abdomen, but as her bed had been rendered very uncomfortable by the incautious manner in which the cloths

had been used, I obtained some bran, which I have found to constitute the best application on such occasions, as it retains the heat for a long time, and can be easily so far deprived of moisture as to afford no inconvenience to the patient. Before leaving her I placed my hand upon the abdomen, but was disappointed to find that it was equally tender at every point as before, but as she was becoming more quiet, and had ceased for a short time to utter her complaints aloud, I hoped that the opiate would eventually induce sleep, and allay both the irritability and the pain. The prognosis, however, which I formed was decidedly unfavourable, because the disease had been rapidly progressing for eight hours, and seemed to be very little, if at all, checked by the remedies I had employed. I left strict orders that I should be sent for in two hours, if the pain became more severe, or if any other symptom of an alarming kind should occur; but it was not until 3 o'clock, three hours and a half afterwards, that her brother came for me, and stated that she was much worse, and that he would have called me sooner, but that it was thought she was dying, and that it was unnecessary to give me additional trouble. I returned with him immediately, and found that all her bad symptoms were present in an aggravated form; she had not slept any, nor had she experienced more than a very temporary relief by the remedial measures formerly employed. She had had a copious evacuation from the enema. The blood last drawn was cupped and buffy. Pulse 140, fuller and stronger than when I first saw her. The bandage being removed from her arm, I obtained $\frac{3}{4}$ xv. of blood from the vein formerly opened, but as it now began to flow in a small stream, and as the pain was not in the least subdued, I opened a vein in the other arm, and I did it with the firm intention of trying, in what appeared to me a desperate case, the value of a practice strongly recommended by Professor Burns of Glasgow, in his *Principles of Surgery*, viz.: "I bleed in acute inflammatory affections until the patient obtain decided relief; to be satisfied with nothing short of the mitigation of the pain, and to be guided solely by the effect

produced upon the disease, regardless of the quantity of blood necessary to produce that effect. Being strongly impressed with the accuracy of these views, I considered the syncope that previously supervened an unfortunate occurrence, as it prevented me from carrying the depletion to an extent capable of producing a decided impression upon the disease; and I am still very much inclined to doubt the propriety of attempting to induce syncope on such occasions, by placing the patient in an erect or semi-erect position, because the object aimed at by bleeding in acute inflammations certainly is to relieve the excited state of the vascular system, to subdue inordinate action, and especially to effect a change in the capacity of the arteries, and I believe that syncope, which certainly produces an impression upon the system generally, does not exert such a decided influence upon the heart and arteries as to compensate for the smaller quantity of blood with which its occurrence frequently compels us to be satisfied. This, however, is merely matter of opinion, but it is an opinion which guided my practice upon this occasion, as I not only bled my patient in the horizontal posture, but removed the pillows from her head, that it might be as low as possible. I allowed the blood to flow from her arm until she experienced decided relief, and was able to take a pretty full inspiration without much pain. I regret that I could not accurately ascertain the quantity of blood abstracted upon this occasion, for having filled the six cups previously in use, the only cups in the house, and which I know from actual admeasurement contain ξ xxx. I was obliged to receive the blood into a common wash-hand basin, from which it was removed before I paid my morning visit. The whole quantity abstracted, however, in the short space of five hours, I believe to have been between seventy-five and eighty ounces, a circumstance which, with some others of a similar kind that have fallen under my own observation, has made me a decided unbeliever in the popular doctrine, that women in the puerperal state bear bleeding badly. My own experience, which

certainly on this point is not considerable, induces me to believe that the reverse of this proposition is true. Immediately after the bleeding I administered ʒss. of the solution of the muriate of morphia, and ordered an enema, containing another half drachm of the same solution. I would have employed, at least, double the quantity for this latter purpose, but at the time I could not obtain any more. I also left with the attendants ten opiate pills, each containing one grain of the extract, with positive directions that two of them should be administered every hour till the patient slept, and that she should be left cool and quiet. I saw her at 10 o'clock the following morning; she had taken eight of the pills, after which she enjoyed some quiet and refreshing sleep. Her skin was covered with perspiration. Pain of abdomen so far gone as to enable her to turn in bed without inconvenience, but she was not able to take either a full inspiration, or to bear firmer pressure upon the abdomen. Pulse 120, very small and compressible; she considered herself much better, and certainly contrasting her present situation with what it had been a few hours before, there was evidently a very manifest improvement, but the symptoms still existing, led me to doubt that the disease, though checked, was not eradicated, and as the state of the pulse did not seem to warrant farther bleeding, I decided on following up the practice already commenced, and which a few years ago was strongly urged upon the notice of the profession by Doctors Graves and Stokes of Dublin; I mean the practice of combating inflammatory symptoms by the influence of opium. I therefore directed my patient to take an opiate pill every hour. As she had complained a good deal of thirst, I ordered her barley water to drink, and a little arrow root in the course of the day, if she felt an appetite for it. I also administered a purgative enema, and directed that during its operation she should exert herself as little as possible. During the course of the day she took eight of the opiate pills, and in the evening, though not one narcotic symptom manifested itself, she felt so

much relieved, and so free from pain, that I ordered the pills to be stopped. Her bowels were freely opened by the enema, and her pulse rose considerably in strength, but fell in frequency; she had a good night's sleep, and on the following morning, the third day from the commencement of the attack, her improvement was so decided, that I considered the disease perfectly subdued; and from this period she neither required nor received any medicine, except a few drops of castor oil; and four days afterwards she was out of bed, and has since continued to do well. Thus in the course of 18 hours she took 16 grains of solid opium, 3ss. of the sedative solution of opium, and 3ss. of the solution of the muriate of morphia, and received an enema containing another half drachm of the same solution, and there did not appear, during its administration or afterwards, one unpleasant symptom, or one that could be called narcotic.

This was evidently a well marked case of *Puerperal Peritonitis*, but as many distinguished individuals believe that this affection is not in any respect different from *Puerperal Fever*, I shall briefly state a few additional facts which will tend, I think, to disprove this opinion, an opinion which is ably and eloquently advocated by some eminent teachers and practitioners in this city, and which was several years ago strenuously supported by Dr. Gordon, Dr. Armstrong, and others. And the case under consideration appears to me the more valuable, as it occurred at a time when puerperal fever was prevailing epidemically in this city, and among patients under my own charge, thus affording an opportunity of contrasting the character and progress of the symptoms, and the efficacy of the treatment employed in the two affections; and it is between this case and that epidemic that I wish to institute a comparison, and to establish a difference; leaving altogether out of view the diversified and conflicting accounts of that disease which are recorded by authors. This is the only way in which the two affections can be fairly contrasted with each other, because I am persuaded that

puerperal fever, like every other epidemic with which we are acquainted, appears at different times under different characters, and is often so modified by circumstances, that at one period it assumes an inflammatory, and at another a typhoid type ; and it is by overlooking this fact, and entirely losing sight of a law which holds good in reference to every other epidemic, that gentlemen have been led into error, not in reference to what they have themselves seen and done, but in reference to the condemnation which they have passed upon the practice of others, instituted under circumstances essentially different from theirs. These individuals have erred in laying down with dogmatic authority, precise and definite rules of treatment, as applicable to every form of the disease, without any reference whatever to the prevailing character of the epidemic.

Thus Dr. Campbell and Dr. Mackintosh treated, and as I believe their own account of the matter, I will add, successfully treated, by the strictest antiphlogistic practice, an epidemic which prevailed among puerperal women in this city about ten or eleven years ago ; but I am decidedly opposed to the general doctrine which they inculcate, of always treating puerperal fever upon the same plan, because I have myself, not many months ago, met with the epidemic under a form in which the depletory practice could not be pursued with any hopes of success. It failed, when fairly and boldly tried, in arresting one of the urgent symptoms, and appeared, when early and vigorously pursued, materially to hasten the fatal event. Now during the very prevalence of this epidemic, in which bloodletting and opium proved perfectly inadequate to the cure of the disease, I treated the case at present under review, and combated effectually all the bad symptoms, and symptoms too which had been rapidly progressing for several hours before the treatment was commenced, by bloodletting and opium alone, the very remedies which proved wholly inadequate to the cure, or even to the temporary alleviation of the symptoms of those affected with the epidemic fever. I am, therefore, compelled to believe that

I did not treat, in the person of Mary King, a case of puerperal fever, but one of common peritoneal inflammation, which has repeatedly, under other circumstances, yielded to a similar mode of treatment. Had the two affections been alike, even in their general characters, is it reasonable to suppose that the one would be completely under our control, the other not the least, that the one would yield suddenly to a certain plan of treatment, which only rendered the other more formidable? But as I know that epidemic diseases sometimes very suddenly and unaccountably change their type, and that during one week they may be successfully treated by the antiphlogistic practice, while in the very next week, wine and other stimuli may be imperiously required; I cannot conclude that the facts which I have now stated are decisive of the question, but I hope they will be considered so when taken in connexion with certain prominent symptoms, which were invariably present in all the cases of the epidemic puerperal fever, but which were absent in this case of peritonitis. I shall not, in establishing a diagnosis by a comparison of symptoms, take into account the *lochial discharge*, which of itself has been considered by some, and especially by Dr. Hamilton, an infallible criterion between puerperal fever and peritonitis or hysteritis, because I am persuaded I have in my possession evidence sufficient to prove that it is a very fallacious guide, being sometimes absent, sometimes present, and not appearing, either by its absence or its presence, to modify the disease in any way. If it be entitled to any credit as a diagnostic mark, so much the better for the doctrine which I now advocate, as it did not appear at all in this case till the seventh day after delivery. But there is a secretion which I consider of infinitely more consequence in this matter, and which, though not necessarily present in peritonitis, is, I believe, almost invariably absent in puerperal fever, I mean the secretion of milk. In all the cases of puerperal fever, which I have seen in hospital, as well as in private practice, the breasts, if not flaccid at the commencement, very soon became so, and even in the

favourable cases did not resume their functions till convalescence was fairly established; but in the case before us the mammæ were distended with milk on the second day of the affection, and did not suffer any functional change during the attack.

In puerperal fever, headach is a very early and a very urgent symptom, and in all the cases which I have seen, was the cause of much suffering to the patients, the pain in almost every instance being referred to the frontal region, and in most of them to a circumscribed point in the neighbourhood of one or both orbits. Mary King, though strictly interrogated upon this point, distinctly stated that she had no headach. On the third day of her illness, after the inflammatory symptoms were subdued, and the state of the system had become much altered, both by the loss of blood and the influence of opium, she certainly did complain of a disagreeable sensation in her head, but it had no resemblance whatever to that acute and lancinating pain so distressing to the subjects of puerperal fever. It was a necessary consequence, I believe, of the curative means that were employed, and in no way connected with, or depending upon, the primary affection.

One of the most remarkable and most invariable symptoms of puerperal fever, is a very extraordinary and peculiar affection of the respiratory organs. It is quite impossible to give to a person who has not witnessed it, a correct notion of it by any description. To say that the breathing is short and rapid, and performed entirely without the aid of the abdominal muscles, is giving but a very imperfect representation of that very extraordinary gasping and panting for air so invariably present in, and in my mind, so characteristic of this affection. This state of the breathing is generally accompanied with an acute pain, sometimes stationary in the region of the back or loins, sometimes flitting from one side to another, and changing its seat as the patient changes her position. But that which is to me unaccountable in this matter, and for which I can offer no adequate

explanation, is, that the tenderness of the abdomen, and the amount of pain complained of in that region, are frequently totally inadequate to account for the extreme urgency of this symptom. I have seen women able to bear tolerably firm pressure upon the abdomen, and by an effort of the will able to bring into action the muscles of the abdomen, apparently with very little inconvenience, still the respiration was carried on in the manner I have described. Now Mary King certainly had an affection of her breathing, her respirations were short and hurried, and from the extreme tenderness of the abdomen, nothing else could have been anticipated ; but there was not in her case any of that gasping for fresh air, any of that peculiar panting, which I can compare to nothing but the panting of a dog after a long chase, and which I am inclined to regard as characteristic of puerperal fever.

Neither have I seen any case of puerperal fever in which vomiting was not a very early, a very uniform, and a very distressing symptom, rendering the medical treatment exceedingly difficult ; and the matter ejected invariably presented the same appearance ; it was a yellowish green fluid, of the consistence of water, and I believe that it was composed entirely of the drink that had been swallowed, coloured by the bile which had made its way into the stomach ; but I am not prepared to deny, because I have not the means of disproving the opinion of some very acute observers, that it was a peculiar secretion from the coats of the stomach, but for my present purpose this is a matter of little importance, as I wish merely to establish the fact, that in all the cases of the late epidemic, which I witnessed, the stomach was extremely irritable ; but in the case before us, there was neither vomiting nor a tendency to it.

I must not omit to mention in this place the state of the pulse, which in the present case rose rapidly after the first bleeding, and had become, when I paid my second visit, both fuller and quicker than when I first saw the patient, but in none of the cases of puerperal fever did I witness a similar occur-

rence. The system appeared to be so much oppressed by the influence of the disease, that it was incapable of producing even a temporary reaction.

The symptoms which I have now detailed were uniformly present in all the cases of puerperal fever, which I have seen and treated, and were the prominent and striking symptoms of that disease; and as they did not appear, even in a modified form, in the case which I have now reported, I think I am entitled to conclude, that in the person of Mary King I treated a well marked case of peritonitis occurring in the puerperal state, but that I had to contend with a disease essentially different from puerperal fever.

ART. IX.—*On the Fungating Venereal Ulcer*. By JOHN HART, M. D., M. R. I. A., Member of the Royal College of Surgeons in Ireland; Lecturer on Anatomy and Physiology at the Park-street School of Medicine; Surgeon to the Dublin General Dispensary, &c.

PRACTITIONERS who have had experience in venereal affections, can recognize several forms of ulceration affecting the genital organs, and communicable by impure connexion, which can be distinguished from the Hunterian chancre by a careful examination; some of these are purely of a local nature, being never followed by any secondary symptoms. Such is the leading and most important characteristic of the form of ulceration, which is the subject of this paper, and which I have had frequent opportunities of observing while a pupil, and afterwards while acting as Assistant Surgeon at the King's Military Infirmary, where venereal diseases, in all their varieties, and in every stage, generally formed the majority of the surgical cases. I have subsequently seen numerous cases of this affection in my practice at the Dublin General Dispensary.

It is of great importance to distinguish the form of ulcer which I am about to describe, from the ulcer so accurately described by Mr. Hunter as chancre, inasmuch as the one might be mistaken for the other, by a hasty or superficial examination; although there are most important differences in the progress, consequences, and most appropriate mode of treatment of each.

This form of disease commences in one or more vesicles, seated on the outer or inner surface of the prepuce, on the cervix, more rarely on the glans, or corona glandis. In females it mostly occurs in the recess between the labia and nymphæ, on the inner surface of the latter, at the posterior commissure, and sometimes at the verge of the anus. Each vesicle, after a few days, is succeeded by an ulcer, which presents the following characters, a well defined sharp edge, with an elevated border, when on the prepuce, the surface of the ulcer is generally concave, and covered with a yellow, or greenish yellow coating of tenacious pus: often there is a profuse discharge of pus, more especially if the ulcer be on the inner surface of the prepuce, or at the cervix: the pus, in this case, is mostly cream-coloured, and of uniform consistence. This form of ulcer is not so frequently solitary as the Hunterian chancre, but generally occurs in a crop consisting of two or more.

There is generally a good deal of pain accompanying this affection. The inguinal glands sometimes become tender and enlarged, but scarcely ever suppurate.

When this ulcer is neglected or improperly treated, an exuberant granulation sprouts from its surface, which is hard and firm when its seat is the glans, and softer when it occurs on the prepuce. I have seen this excrescence generally larger, softer, and of a paler colour, on the genitals of females than on those of males.

When the fungus is allowed to continue for any length of time, it acquires a greater degree of hardness, and is more diffi-

cult of removal ; it often expands, so as that its edge overlaps the skin around the margin of the ulcer.

I have not known a single instance where this ulcer was followed by secondary symptoms, and I therefore consider it to be a purely local affection. I have had frequent opportunities of ascertaining that it was contagious. Men under my treatment for this affection frequently communicated it to their wives, in whom it invariably exhibited exactly the same appearances as those above described.

Treatment.—Mercury, given internally, is not only unnecessary but totally useless in this disease, which I have often seen it continue, not altered in the least, although the patient had been fully salivated. It is to be treated altogether by the application of escharotics. I have found nitrate of silver, applied in substance, the most effectual means of removing the excrecence, if soft, or preventing its formation if applied to the ulcer which precedes it.* I have also used the sulphate of copper in substance, with advantage in such cases. It is sometimes, however, necessary, especially when the fungus acquires a considerable degree of hardness, and overlaps the surrounding skin, to excise the growth with a knife or pair of sharp scissors : but if the excision be not followed up by the application of the solid nitrate of silver or sulphate of copper to the surface exposed by the removal of the fungus, the latter will be reproduced in three or four days.

I have found some persons so timid as to refuse submitting to excision, or even to the application of caustic. In such cases I have recommended strong solutions of the above mentioned escharotic substances, and the frequent use of a powder composed of savine and sal ammoniac, in equal parts, or the acetic acid as recommended by Mr. Carmichael. This treatment has in

* The nitrate of silver prepared by Mr. Scanlan of this city, is the purest I have seen, and much more effectual than that which is usually obtained from druggists.

a few instances been successful, after having been persevered in for a sufficient length of time ; but it has more frequently failed, and the mode of treatment originally objected to has been at last submitted to, and with its usual good effects in removing the disease.

17, *Clare-street*.

POSTSCRIPT.—I have, since writing the above, looked into the work on the venereal disease, lately published by Mr. Wallace, who considers the use of mercury necessary in the treatment of what he terms “the fungous primary syphilis :” but as my experience leads me to consider the affection described in this paper as a purely local disease, distinct from syphilis, and never followed by secondary symptoms, and that I have never seen it cured by mercury, I still adhere to the opinion I have advanced as to the mode of treatment best suited to it.

ART. X.—*Observations on Epidemic Catarrh*. By JOHN COLVAN, M. D., Licentiate of the King and Queen’s College of Physicians in Ireland. Armagh.

TO THE EDITOR OF THE DUBLIN JOURNAL OF MEDICAL AND
CHEMICAL SCIENCE.

SIR,—Supposing that any notice of the prevailing epidemic, even though cursory and imperfect, as this must be, from the hurried manner in which I am obliged to send it to you, will not prove altogether unacceptable, I beg to lay before your numerous readers a feeble outline of its appearance in Armagh and neighbourhood,

And am, Sir, sincerely yours,

JOHN COLVAN.

CATARRHAL Fever, or the acute catarrh of Laennec, with more or less of an epidemic character, has prevailed here to a considerable degree, almost every spring for several years past, according to my observation, chiefly, however, among farmers

and the labouring classes, who are most exposed to the vicissitudes of the weather. This spring, however, from the very sudden changes in the weather, viz. from a dry, temperate, and warm atmosphere, in the early spring, to a cold, frosty, and uncongenial air, with N. and N. E. winds, and latterly to a humid, cold, and perhaps what is still more dangerous, an ever changing or very variable atmosphere, the number of persons attacked with catarrh has been unusually great; nor has it been confined, as in former years, to those employed out of doors chiefly, for children of a few months old, females who seldom go out, and are but little exposed, have been attacked very generally, and have, in many cases, suffered very severely. In my opinion, the "Epidemic constitution," to use the language of the immortal Sydenham, of last year, has been very visible, through almost the whole of the cases that have come under my care, and in a considerable number of them, has even formed the leading feature. This is *a most particular feature*, and coincides *exactly* with what I have observed after the fatal epidemic fever of 1817, for in 1818 there was a considerable number of persons admitted into the temporary Fever Hospital under my care, whose fever differed in nothing from that of the preceding year except *malignity*.

The symptoms of the present epidemic catarrh or influenza have been, in general, those of common fever at first, such as rigors, lassitude, erratic pains, headach, or vertigo, or both, anorexia, debility to an unusual degree, with cough, pains, for tightness of the chest, sometimes transitory, sometimes more fixed, yet seldom approaching pleurisy. In many cases cynanche is an early and very troublesome symptom, and in many others, and indeed in almost all, a great oppression at the præcordium is a leading symptom: if you ask where the greatest uneasiness is felt, the generality of patients will point to the "pit of the stomach," or lower part of the sternum; in many cases this is accompanied with "pains and a soreness across the belly and through the bowels," and wants only the "tingling and numbness in the extremities" to be *exactly* the same as the

choleric fever, or as the French called it, the “cholérine,” that ushered in the dreadful scourge of last year. Some few, however, will point to the top of the sternum, as the part affording most distress, and many who are severely affected, can point out no particular part. Venesection, I have found in all cases, except those of children, to afford relief, although in some instances the quantity did not exceed four or six ounces, syncope having intervened. The blood in every case was *extremely* dark, and having a cloud, or in other cases, a thin coating of fibrine over it, (precisely as in the choleric fever of 1832), the patient very generally expressing relief at the time, or next day: a little James’s powder, or hippo, with calomel at night and a foot bath, followed by an infusion of senna and epsom salts next morning, or a compound powder of jalap, if the head or biliary secretion seemed much deranged, or a dose of castor oil, tr. of rhubarb, and tr. of opium, if “the pains across the belly and through the bowels” were severe, in a great number of cases brought on a convalescence, which with care, and perhaps a repetition of the medicines and pediluvium, ended in health. In some cases, however, a repetition of the bleeding, or leeches to the head, or a blister to the neck, breast, or side, were necessary, yet these cases were few to the number affected. I have known several persons, through a dread of venesection, struggle with the complaint for one, two, or three weeks, and finally recover very imperfectly; many persons, no doubt, recovered without bleeding at all, but I have known many persons experience great relief from bleeding, when the quantity taken was only a few ounces, but when it evidently affected the system a good deal, and in whose cases no particular symptom pointed to the necessity of venesection, on the contrary, a person unacquainted with the relief it afforded, would have considered it any thing but called for. When the cough was very severe, a mucilaginous mixture, with honey and camphorated tr. of opium, digitalis, or hyosciamus and hippo, or antimonial wine, was of great service, and in some cases a gentle emetic.

Few cases have ended fatally, unless greatly neglected at the commencement, or in very old, and debilitated persons. In general, the pulse has not been either very full, or hard, but quick, small, and compressible, nor has the the heat of skin, or flushing of the face, been equal to what occurs in common continued fever. On percussion, the chest generally has afforded a clear sound, except in a few cases where pneumonia has occurred; and the stethoscope has discovered in my hands, chiefly, the 'rale sonore,' the 'rale sibilant,' and in some cases, the 'mucocrepitating rale.' I have also met with a few cases of the 'suffocative catarrh,' when the distress was extreme. The epidemic is rather on the decline.

Since I wrote the foregoing, which I was sorry to find was too late for your last Number, the forebodings which some of the symptoms of the then prevailing epidemic, (influenza,) led me into, have been but too fearfully realized, as an irruption of malignant cholera of the worst character, collapse, occurred in a hamlet, containing only five or six houses, and within a mile of this city in a south east direction, on the 19th of July. It appears to have had a purely local origin, and to have been also local in its course, as it has not extended beyond the precincts of the few houses alluded to. It originated in a man of delicate habit, drinking three or four pints of sea-water, on too successive mornings, a jar full of which had been brought to him by a relation, two days before.* The first effects were, of course, violent purging and prostration of strength, to which were added vomiting and cramps. When I visited him, he was far gone in collapse: no pulse, skin cold, and covered with a cold, clammy moisture, although he feels hot and burning; has occasionally cramps in his legs and toes, has no vomiting now, passes watery stools, and has a desire for cold water; is also hoarse, and has passed no urine lately. Such were my obser-

* I had some of this sea-water brought to me, on visiting the place, and its taste and smell were very putrid, though they assert it was quite fresh when used.

vations at his bed side. I administered five grains of calomel and one of opium every third hour, and gave him a cordial mixture; the medicines scarcely even protracted the disease, though they afforded him relief; he died on the 20th, and was buried on the 21st. On the evening of the 21st, an elder brother, who had but little communication with this man, but who lived next door, and had been at the funeral, took ill with a pain in his stomach, which got worse, and turned to a purging with vomiting, and cramps. When I saw him first, nearly twenty-four hours after the attack, he was in *collapse*, but no pulse; skin and tongue cold, though he felt a burning heat inwardly, and a desire for cold water; he was also hoarse; he had made water, I was informed, shortly before I saw him. This man so far recovered, as to have his pulse, and the heat of his skin, in a great degree restored, and the vomiting, and purging, and cramps, removed; the urinary secretion, though, never returned; an affection of his head, however, supervened, probably effusion, and after lingering five or six days, he died quite comatose. The treatment was nearly the same as in the former case, excepting a blister to the nape of his neck, and omitting the pills for a little, when the head became affected, after which the bowels got ill immediately, again, and he passed some sanious stools for a time before his death. The houses in which these two persons lived are on one side of the road, and under the same roof. On the same day that this second person took ill, a man, who had been also at the funeral of the first who died, took ill; he lived directly across the way, his house being the centre one of three, all close together, yet neither of the other two houses, up to this period, have had an individual ill. His case was a very bad one, the symptoms very severe, and the course short; he lived little more than 48 hours. On the night of his burial, two persons in his house, one a daughter of his and a married woman, the other a son of his, aged 13 years, took ill. I did not see them till the evening of the next day, during which time they had lain in a wisp of straw, without medicine, or care, or

comfort, and surrounded by their copious evacuations. I gave them nearly the same medicines, and through the charity of the Armagh board of health, of which I am a member, got out from the city Cholera Hospital, a few iron bedsteads, with proper clothing, a nurse-tender, and an orderly to keep out visitors and go of messages, and had the sick removed to this temporary hospital. The boy died the same night, becoming nearly black ; the sister recovered only so far, as to die, after lingering five or six days, of effusion on the brain, as in the second case. With the exception of a girl, who was taken in proper time, and who speedily recovered, by venesection and suitable remedies, thus ended this formidable attack of malignant cholera, in a district hitherto free, and in a situation most healthy, on a gentle acclivity, and a lime-stone rock, good water, good air, at least good ventilation, the people not of the poorest class, and the houses not very dirty. It is proper, however, to notice, that a lady, living about a mile across from these people, in a more easterly direction, and who was attended by surgeon Leslie and Dr. Cuming, of Armagh, in conjunction with me, had a severe attack, at the same time, of bilious cholera, but by timely administration of the same means, and a warm bath, recovered. It appeared in her case, to have been brought on by eating fruit on the evening before, and on the day of the attack, large quantities of which, (strawberries), were thrown up in the matter vomited. Some other persons also, more near, had rather severe bowel attacks, with pain at the precordia, and a numbness of the hands, and forearms, and feet, and legs. Venesection, however, a dose of calomel and opium, followed by a castor oil draught, &c., generally removed them in a reasonable time. Since this irruption of cholera, the influenza has greatly subsided, and is now almost gone ; bilious cholera, however, and bowel affections are common, particularly in children and weak persons, and have been in some cases fatal.

I think it will appear, from what I have stated, that cholera of the most malignant species can originate locally, I mean without

being ‘imported.’ That it may be produced by improper medicines or articles of diet, and that having once so originated, it appears capable of being propagated from one to another, and that it has a very close connexion with the prevailing epidemic, and with the constitution of the atmosphere. I am of opinion, further, that what is called in our common language Cholera, may be divided into three species, viz., choleric fever, or what the French call ‘cholerine,’ simple or spasmodic cholera, and this again combined with the most malignant species of fever known, but more closely resembling the blue congestive fever than any other. Choleric fever, or cholerine, is more commonly depending on a peculiar atmospheric influence than on contagion, though I believe it contagious. Simple or spasmodic cholera is produced most commonly by improper articles of diet, or by drinking immoderately, and I conceive is not contagious. The worst form, or when this is combined with blue or black fever, is highly contagious, but I think not so much so as badly spotted typhus. As I intend, however, to trouble you in a future number, when I hope to substantiate my opinions by facts, and a few cases, I shall close this article with a brief account of the appearances on dissection, of a most tremendous and rapid blue case, which occurred in a young man, *æt.* 25, who took ill ten or twelve miles from this town, returning from a watering place, where he had been for recreation; he died in our Cholera Hospital here, being unable to be drawn further, and no person, of course, being willing to receive him.

CASE.—T. M. *æt.* 25, a fine looking young man, tall, and well made, of a dark complexion, and hair black or dark hue, was drawn to the Cholera Hospital on Tuesday evening, at four o’clock; he was cold, pulseless, hoarse, unable to afford himself the least assistance, and getting blue about the lips, nose, eyes, and limbs. He was stated to have taken ill, by his companion, in which he concurred, about 11 or 12 o’clock in the forenoon of Tuesday, on his return from a watering place, where he had been for recre-

ation ; he had just got seven miles on his road when he took ill. He denies having been near any person whom he knew to be ill of cholera, and ate no shell-fish on the shore, nor did he take any sea water on the day he left it. He had been there only eight days, and drank sea water only six mornings, three pints each morning, which did not operate more than two or three times daily with him, and from which he felt, while there, no bad effects.

I had him brought in and put to bed, gave him immediately a dose of calomel and opium, and some cordials, which we repeated ; warmth was also applied to the feet and legs, but he died at 12 o'clock, having gradually sunk from the time of his admission.

Autopsy, 10 hours after death ; body yet warm. Body discoloured, verging to a dark bluish cast, particularly about the face, hands, legs, thighs, and feet ; muscles quite rigid, although the body is yet warm, so as to make a limb, when laid hold of, like a piece of wood ; the extensor muscles having the predominance in the legs, and the flexors in the arms and hands ; the legs being stretched out quite stiff, the fore-arm half bent, the fingers closed, and the hands shut ; the muscles of the under jaw also quite rigid, so as to make it impossible to open the mouth.

On opening the cavity of the thorax, the first remarkable appearance was the dark red colour of the pleura costalis ; the pleura pulmonalis also appeared preternaturally coloured of a reddish hue. The lungs were collapsed, not filling more than a third of the cavity on each side. The diaphragm protruded very much into the cavity of the thorax, its convex surface reaching as far up as between the third and fourth rib. On removing the greater portion of the right lung, it appeared sound in texture, but dark coloured, and containing a very dark blood ; near the margin of one of its lobes also, was a stony deposit, considerably larger than a common pea, which was encysted, and

was with difficulty removed from the surrounding portions of lung. It did not effervesce with concentrated sulphuric acid. There were also a few old and slender adhesions of the right lung to the side; the convex portion of the diaphragm appeared quite fleshy, and the whole inner cavity of the chest was devoid of that halitus or dewy moisture, which generally covers the surface of the serous membranes. The most extraordinary arborescence of blood-vessels also appeared over the whole surface of the pleuræ, lining the ribs, inner surface of the sternum, diaphragm, &c. The left lung also was sound in texture, but collapsed and dark coloured as the other, and like it, laid to the convex surface of the diaphragm, so as at first sight to give the appearance of adhesion, and requiring some little force to raise it up, yet not vascularly adherent. The pericardium also was externally and internally very reddish coloured on the internal surface, the red mingling with the silvery hue, afforded rosy tints of various shades. The heart, which appeared larger than ordinary, was also dark coloured; the inner surface of the pericardium was not quite so dry, nor by any means so reddish coloured as that of the pleura; no fluid, however, was contained in it. The blood, spunged out of the pericardium on removing the heart, was as thick, and nearly as dark coloured as tar. The right ventricle felt flaccid, the left, firm externally; on cutting into the right cavities, they were partly filled with very dark, half coagulated blood, mixed with fibrine, the fibrine lining the surface of, and mixed among the muscoli pectinati, and columnæ carneæ. The left cavities contained scarcely any blood; the auricle near the ventricle, scarcely any. All the parts appeared sound, as were also the larger arteries and veins.

On opening the cavity of the abdomen, the most remarkable appearances were, the preternatural redness of all the parts, the omentum and peritoneum appearing quite fleshy, the latter especially over the hypogastric region. The stomach, colon, and large intestines, generally were much distended and slightly

reddish, while the smaller intestines were extremely red, and huddled all together towards the spine ; the blood-vessels on their surface, and that of the peritoneum, were quite distended, and every twig traceable, gave to the whole a most extraordinary appearance. The inner surface of the peritoneum, and the rest of the intestines, were also quite devoid of moisture, and on exposure to the air for a few minutes, became as dry as if the subject had been dead for weeks. The liver, which, except being paler, was healthy, was protruded high up into the cavity of the thorax.* The gall-bladder was extremely large, and its duct, very much distended, could be traced down to the intestine ; the cæcum appeared externally of a dark greenish hue ; the urinary bladder felt quite contracted, and like a solid viscus ; the appendix vermiformis was large and tortuous, but not discoloured ; the pelvic cavity and its contents seemed to have borne a great share of the intensity of the disease. The spleen was of the usual size and colour but very flaccid, and on cutting into it, scarcely a drop of blood could be squeezed out. The stomach contained a large quantity of dark yellowish green or brown fluid, having some flocculi mixed ; its inner surface also appeared as if parboiled, and the rugæ very prominent, some as large as the little finger, and the colour of the whole intestine of a rather light reddish hue. The intense color and enlargement of the rugæ were most conspicuous, first, below the cardiac orifice at the larger sacculus. The inner surface also of the stomach was covered with a mucus-like matter in some places. On cutting into the gall bladder, the bile was very dark coloured, but fluid. On opening the head, the veins of the convolutions of the brain were quite conspicuous through the dura mater, which appeared more natural than other similar membranes ; the dura mater was itself, however, of a purplish red colour, and

* This protrusion of the diaphragm and abdominal viscera so far up into the thorax, appeared to depend on the forcible contraction of the recti abdominis muscles.

its vessels loaded with blood. The veins on the surface, and dipping among the convolutions, were exceedingly large and tortuous; the sinuses did not appear so much so. On cutting into the ventricles, a large quantity of clear fluid escaped; the choroid plexus also appeared much paler than ordinary. The substance of the brain and cerebellum was quite natural, but on cutting into either, many bloody dots could be observed. There was no effusion at the base of the brain, or in the spinal canal. Mr. Davis, formerly the resident at the Cholera Hospital, and Mr. Robert Baxter, pupil at the infirmary, were present, and assisted me in this most unpleasant and dangerous examination.

ART. XI.—*On the Effects of Mammary Irritation in Amenorrhœa.* By CHARLES PATTERSON, M. D., Physician to the Rathkeale District Hospital.

MARY REARDON, æt. 24 years, of moderately corpulent habit, was admitted into the Rathkeale Hospital on the 10th of August, 1832. She laboured under slight synochial fever, which, in a few days, yielded to venesection and purgatives. On the 19th August, symptoms, which were considered of a hysterical character, presented themselves, with pain in the upper and outer part of the right side of the chest. For the latter affection a small sinapism was prescribed, but from inattention of the nurse, it was made so large that it covered a considerable portion of the mamma. The sinapism remained on for half an hour.

At the visit on the following morning, the 20th August, Reardon complained that the right breast was exceedingly painful, the pain being very different in its character from that which she had before experienced. On examination, the whole side of the chest was found considerably swollen; there was slight dif-

fused redness of the skin ; and though the mamma itself was enlarged to four or five times its natural bulk, yet there was no circumscribed hardness, nor any tendency to suppurative inflammation.

On the 21st August, the right mamma and adjoining parts of the chest, were found much more enlarged than they had been at the preceding visit. The left mamma and side of the thorax were unaffected, and it was announced by the nurse, that the catamenia had that morning appeared, and were then present in considerable quantity.

This discharge, which, as the patient stated, had been for two years and a half wholly suppressed, continued to flow for two days ; then it began to decline, and with it the tumefaction of the mamma gradually disappeared.

My attention having been thus accidentally directed to the practicability of exciting the torpid functions of the uterus, through mammary irritation, I availed myself of the next opportunity presented to me of again observing the effect of that operation.

Catherine Power, æt. 19 years, applied to me the 14th September, 1832, she complained of headach, languor, loss of appetite, and inability to attend to her usual business, that of a servant. She stated that about the middle of April, the menstrual discharge being then present, she incautiously exposed herself to cold in washing clothes at a river. The catamenia then suddenly ceased, had not since returned, and from that period she had been constantly subject to ill health. She had consulted different medical gentlemen, and taken a great variety of medicine with little advantage.

I directed that the clavicular half of the right mamma should be covered with a sinapism. It was allowed to remain on for thirty minutes ; and on visiting her in six or seven hours after its removal, I found the whole right breast considerably swollen, hot, and painful. The next morning the enlargement of the mamma was very much increased, the tumefaction hav-

ing extended to the clavicle and axilla of the irritated side. There was no hard circumscribed or prominent tumor, but a painful diffuse elastic distention of the mammary gland and surrounding cellular substance. On the evening of the day next succeeding the application of the sinapism, this poor girl, with much joy, reported that the catamenia had appeared. The flux having continued for two or three days in moderate quantity, she then found herself greatly relieved of the headach and other most distressing symptoms; and in a week her health was so far restored, that she ceased to require any further attendance.

In both these cases cold evaporating lotions and gentle saline aperients were employed to moderate the local phlogistic engorgement. Both patients have since continued to menstruate at the regular periods.

From the facility with which the menstrual flux was induced, in the preceding cases, it would seem that the beneficial effects, in Amenorrhœa, lately observed to arise from the long continued daily application of one or two leeches to the breasts, were entirely owing to the great irritation which the leech bites had eventually produced in these organs. The abstraction of blood by leeches from the mamma, had not, according to the reports of the cases in which they were employed, the least perceptible influence over the uterine functions, until pain, heat, and excessive tumefaction of the breasts had been first developed. Phlogistic engorgement of the mammæ being then the essential step in the movement, which, in these instances, determined the flow of the catamenial discharge, it must be obvious, that for the production of the necessary irritation to effect that engorgement, the simple application of a sinapism would have been, in every respect, infinitely preferable to the tedious and troublesome process of the daily repetition of leeching.

But it must not be supposed that mammary irritation is applicable to every form of amenorrhœa. I know that it will not be successful in every case, for I have found it to fail.

Mary Fitzgibbon, æt. about 21 years, of spare habit, was affected with headach, and irregular dyspeptic symptoms. The headach permanent, with occasional aggravation ; countenance and tongue chlorotic ; mammæ undeveloped. The menses had been scanty and irregular from the 16th to the 19th year of her age, but during the last two years they have been totally suppressed. No apparent organic impediment.

A sinapism was first applied to one breast, and afterwards a similar application was made to both breasts at the same time. But though the sinapisms produced their ordinary effects, considerable pain and cutaneous irritation, yet the enlargement of the mammæ was very trifling, and there was no consequent uterine action.

ART. XII.—*A Reply to Dr. Johnson's Strictures.* By WILLIAM O'BRIEN ADAMS, M. B., Fellow of the King and Queen's College of Physicians in Ireland, and Assistant Physician to the Dublin Lying-in Hospital.

AN article from the pen of Dr. Johnson of Edinburgh, appeared in the number of this Journal for July last, purporting to contain strictures upon some observations supplied by me in the preceding number, upon mediate auscultation, as a practical guide in difficult labours. From its imposing heading we were prepared to expect a practical exposition of misstated facts or inaccurate observations, written by a gentleman who had, at least, made himself conversant with what was already known, and put forward by others upon the subject, if he had not paid experimental attention to it himself ; we were, however, soon disappointed in this respect, and therefore concluded that the deficiency would be more than counterbalanced by the closeness and accuracy of his own experiments and observations. But let his competency to pass strictures, upon a paper avowedly written upon obstetric auscultation, be collected from the

fact stated by himself, that he *never* had been so fortunate as even to detect the foetal heart, although he *thought he did so* on one occasion. At first it occurred to us, that seriously noticing the attack of such an individual would be unnecessary. But when we reflected that our observations were upon a subject comparatively in its infancy, and that therefore we had reason to suspect, that they, as well as the objections to them, might possibly fall into the hands of persons who had paid as little attention to it as our objector; we conceived ourselves called upon to vindicate the accuracy of our views and statements, by a refutation of the objections made against them.

We are surprised at Dr. Johnson's expression of disappointment at our not detailing the stethoscopic observations, upon which we ground our belief of the child's death. Had he looked at page 68,* he would have found it distinctly stated, that the absence of the peculiar double beat of the foetal heart, *its existence having been previously ascertained*, were the grounds on which we founded our opinion of the child's death. And although, by quoting abstract passages, he exhibits a good deal of ingenuity in his attempts to make it appear, that the stethoscopic evidences are held out by me as the *only* guide for interference, we submit that the tenor of our observations generally by no means warrants a conclusion so perfectly at variance with obstetric principles. Dr. Johnson objects to the want of proof, that the stethoscope is capable of indicating the child's life or death. We can only say, that its utility in this respect has been established by ample observation of its accuracy in one of the most extensive midwifery establishments in Europe. Cases in abundance could be adduced to prove these points. The three following, which occurred under the management of the physicians of this hospital, and subject to the observation of a large class of pupils, we deem sufficiently

* See Dublin Journal of Medical and Chemical Science for March, 1833.

illustrative of the accuracy of the diagnosis afforded by the stethoscope.

Ellen Collins, æt. 25, was admitted into this hospital during the night of the 28th of March last, being in her first pregnancy. On seeing her the following (Friday) morning at 9 o'clock, A. M., we found her pulse 96, very small and weak, surface cold and livid, with occasional vomiting of a dark coloured fluid, tongue white ; says she has been in labour since 3 o'clock, P. M., of the Wednesday previous. On making an examination *per vaginam*, the os uteri was *only dilated to the size of a shilling* : on examining her with the stethoscope, the foetal heart was distinctly to be heard in the left iliac region. She was directed to have some wine whey, and a turpentine injection immediately ; saw her occasionally through the day ; symptoms much the same ; uterine action feeble.

Nine o'clock, P. M. Made several attempts to number the pulse, but could not from its smallness and irregularity. Surface warm ; bowels had been several times acted upon after the injection ; occasional vomiting ; uterine action feeble ; but on making an examination *per vaginam*, the os uteri was more dilated, the foetal heart still audible : *Habeat formâ pilulæ gr. pulveris opii.*

We now left her under charge of one of the most intelligent pupils, Mr. R. Bell, who was to remain with her during the night, and to give notice if the foetal heart ceased, or if any change occurred. She had about one hour's sleep after the pill, when her pains became more frequent and stronger, and she was delivered at 5 o'clock, A. M. on the 30th, of a very fine living child. She recovered well, and left the hospital on the 6th of April.

Mary Mullock, æt. 28, was in labour of her first child on the 10th of January last ; the abdomen being very large and pendulous, the attendants wished to ascertain whether she had twins. We examined her with the stethoscope about 10 o'clock, A. M., and could only detect one foetal heart, which we heard,

distinctly in the right iliac region. On making an examination *per vaginam*, the os uteri was beginning to dilate. She continued in labour until the following morning, when she was examined most carefully, with the stethoscope, by Dr. Collins and myself; the foetal heart had ceased; however the labour having made considerable progress, the os uteri being fully dilated, the pulse remaining quiet, and there being no urgent symptom present, we appointed to see her again in the evening, if nothing should occur in the interval to require our assistance.

Eight o'clock, P. M. The labour made no advance since our last visit, although the pains continued strong and regular; the patient had become hot and feverish; pulse 120 and small: the head was now lessened, and the child brought away by the crotchet; the funis shewed evident signs of putrescency; her recovery was slow.

Anne Hughes, æt. 32, was admitted into the Lying-in Hospital on the 17th of May last, in labour of her first child. She was fifty hours in labour previous to delivery. When visiting her at 9 o'clock, P. M., on the 18th, with my colleague, Dr. Murphy, and several of the pupils, we heard the foetal heart distinctly in the right iliac region; and on making an examination *per vaginam*, the os uteri was found dilated to the size of a crown piece, and the head had not entered the upper straight of the pelvis. The following morning, at 9 o'clock, A. M., on examination with the stethoscope, the foetal heart had ceased, but the labour had made considerable progress, although the pains were feeble; the head was nearly pressing upon the external parts. There being no urgent symptom present, we appointed to see her again at 9 o'clock, P. M., however she was delivered by the natural efforts at 7 o'clock, P. M. The funis was quite putrid, and the cuticle peeled off on the slightest touch: she recovered well, and was discharged on the 26th of May.

In the first case, that of Collins, the evidence of the stethoscope made us delay delivery, and the result proved that the condition of the foetus was exactly ascertained by the instrument.

Mullock's case points out, that in operating we did not destroy the life of a human creature, the marks of putrescency proving that death had taken place in the child, of whose life we were satisfied, when this patient first came under our care.

The next case, that of Hughes, was one in which the natural efforts were sufficient to expel the dead fœtus ; but in which, had any untoward symptom occurred, we should instantly have proceeded to delivery, satisfied that in doing so, there was no question as to the state of the fœtus. But Dr. Johnson asks, of what use is the knowledge of the death of the child ? and joins in the statement which he quotes, that he considers this no desideratum in the art of midwifery. We could, did we feel inclination, or did the subject demand it, bring forward ample argument to refute this assertion ; but the fact seems to have been so universally admitted by all accoucheurs, that we deem such refutation unnecessary. As, however, this gentleman appears to pin his faith so much more upon authority than the dictates of reason, we shall, for his satisfaction, quote one or two extracts from the pen of authors, whose practical experience and character may form a sufficient guarantee for their correctness.

Dr. Denman, speaking on the subject of craniotomy, says, "the certainty of the death of the child would not therefore immediately indicate the necessity of the operation we are considering, but the reasons for, and justification of it, must be adduced from the state of the mother only ; but as the signs of a dead child, if decisive, would, on many occasions, have their influence on practice, and might, at least, induce the most cautious and prudent man, to hasten the time of performing this operation, which he might otherwise defer ; and as the knowledge of these signs will lead to a more full investigation of the subject, it is proper to enumerate them."

Dr. Merriman, page 51, says, "the reluctance which every well regulated mind must feel at employing the perforator, even in cases of the greatest necessity, while the infant is yet living,

naturally occasions a wish to delay the operation, till there are some indications of the child's death; but evidences to prove that the foetus has been long dead in utero are not what is commonly wanted, the object is to ascertain whether the child, which was known to be living when the labour commenced, has afterwards lost its life from the violence of the pains, or the severity of the labour."*

Dr. Johnson states, "that the use of the stethoscope is attended with little, if any, advantage to the accoucheur in difficult labours, for a reason the very converse of the last, namely, that whether the child be dead or alive, we do not, in fact we dare not, without incurring serious responsibility, defer the delivery, after we perceive the first approaches towards a state of exhaustion, or towards some other equally untoward circumstance on the part of the mother." We can simply answer the imputation of our having recommended such practice, by saying, that neither the spirit nor the letter of our observations ever went to recommend the deferring delivery, after a state of exhaustion, or any other equally untoward circumstance, set in on the part of the mother.

When commenting on the page in which we say, "pursuing this subject still farther, mediate auscultation will direct us as to the instruments necessary to be used in each peculiar case," Dr. Johnson says, "with this extract we certainly cannot concur;" we confess, that whatever matter of regret it may be to us, that we cannot carry with us his concurrence, it is gratifying to know, that on this subject we have the opinion of a gentleman of at least equal experience in his profession, Dr. Waller,† who states, "that the stethoscope might probably be brought usefully into practice, to assist in forming a judgment respect-

* See also Beaudeloque, Tom. II. Chapitre 5. "Des accouchements qui ne peuvent s'opérer qu'à l'aide d'une main armée de quelque instrument tranchant applicable sur le corps de l'enfant article premier et second."

† See last edition of Denman's Midwifery by Dr. Waller.

ing the life of the child, when the use of instruments are required, and thereby enable the accoucheur to determine, whether the long forceps or the craniotomy instruments should be used in those cases, where there is contraction of the superior aperture of the pelvis.”

Although we are perfectly aware, that much mischief has ensued from the ill judged and ill conducted application of the forceps, still the abuse or wrong use of instruments is by no means a sufficient argument against their employment; we would therefore be sorry to be thought to undervalue instruments, which, if judicially applied, and in cases where they are indicated, are capable of affording much assistance to the practitioner, still less that their use should be superseded by the perforator and crotchets. But when we consider the causes of difficult labours, it will be evident that they are not the cases in which the forceps might be used with the greatest advantage, and further, we would ask, when powerful uterine action presses inefficiently on the head impacted in the pelvis so long as to destroy the child, is there not generally a threatening of local inflammation? are there not generally symptoms of excitement sufficient to make it highly important to know, that the safety of the child being impossible, that of the mother alone must be attended to? or conversely, is the safety of the child generally risked in cases quite free from those symptoms, which make us anxious for the safety of the mother? It must therefore follow, according to Dr. Johnson's own rule, that in cases of arrest, still more those of locked head, (if swelling and tenderness of the soft parts within the pelvis take place), he must have recourse to that most horrid of all kinds of operations, embryotomy, a horror, we presume, arising in his mind from the necessary destruction of human life; and yet he regards, as useless, a means which might inform him that the operation is deprived of its horrors, because the foetus is already dead; and certainly if the stethoscope is of any value in the practice of midwifery, it is in pointing out when

this occurrence takes place. Perhaps, without casting the least reflection on Dr. Johnson's skill in the use of instruments, he may come to the opinion, that embryotomy is the safer operation in difficult labours, when a more successful application of the stethoscope than he appears as yet to have made, and a more extended experience than he has yet acquired, will convince him of the certainty of its indications; and when we have such decisive evidence of the death of the foetus in utero, we should conceive ourselves to be not only justified to terminate the labour in cases where danger threatened the mother, but highly unfit to practise midwifery, if from ignorance of the fact we delayed to do so.

We confess we have left ourselves open to critical censure in our mode of expressing the value of the symptoms indicative of the death of the child, but it will serve as a useful lesson to us in future, and impress upon us the necessity of bestowing greater care in observations whose destination is to come before different classes of readers, some anxious for information, some not less anxious to cavil and find fault. We would now take occasion to correct the expression, whose inaccuracy we admit, by substituting for "when labour sets in," "in the progress of a difficult labour," when we maintain that these signs, always equivocal, are often altogether absent. Dr. Johnson's objections to the stethoscope's affording proof of the child's death, founded upon the circumstances of suspended animation, cannot hold for a moment. Their futility is self-apparent. What can the suspension of respiratory life, after birth, prove as to the previous existence of the foetus?

But his arguments upon the position in which the child's heart is heard (the right or left iliac region) may appear to those not practically conversant with the subject as involving a more rational objection. Let it be recollected, however, that Dr. Johnson is merely arguing from *theory*, that he has already admitted his *inability to detect* the phenomenon upon which he descants; not, therefore, with a view to satisfy him of the fact

heart's being audible in the position mentioned by us, as we are always to bear in mind that he cannot detect it at all, but to satisfy those who are more fortunate in their investigations, we would refer to a work just published by Dr. Evory Kennedy* on this subject, in which is pointed out, p. 87, the great extent of the foetal heart's action, and the causes upon which it depends. We will quote a passage from the work of the talented author already referred to. Dr. Kennedy says, p. 99, "It will be evident, then, in the position of the child which we have described as the most frequent, namely, when the shoulder or part of the back comes obliquely in contact with the walls of the abdomen, that we shall not find the pulsation at the centre, but rather, at the antero-lateral part of the abdomen, it being apparent a little to the right or left of the median line, over the ramus of the pubis, according to the side on which the child is placed; we can easily understand that it is a matter of facility to detect the foetal heart in the right iliac region, when the child is situated with its left side towards the abdominal parietes at this part. It might at first sight appear next to impossible, that, in the position of the child, in which its left side is applied to the back of the mother, and, consequently, its right side is in contact with the abdominal parietes, we should be able to distinguish the foetal heart at all, so great a depth of parts intervening. We shall, however, easily perceive *the fallacy of such a conclusion*, if we bear in mind the facts mentioned, p. 87, whilst treating of the foetal heart, as well as the circumstances of the greater size and capacity of the right auricle in it, and its consequent position, thus being *more* to the *right side* than in the adult; and further, that on these accounts, the action of the heart in a new-born infant is distinctly perceptible at the right scapula; and that the sound is even perceived on the application of the stethoscope to the right arm pressed upon the chest,

* See Observations on Obstetric Auscultation, &c. &c. by Evory Kennedy, M. D.

although then the position represented in *fig.* 11 may render the sound less distinct than that in *fig.* 1, it does not necessarily prevent our hearing it, as it is conveyed with sufficient distinctness through the intervening parts."

Further comment upon the apparently insuperable objection, founded upon the position of the foetus, is unnecessary ; but as we have stated the situation where the foetal heart may be heard from observation, and not from theory, we are desirous to prove that there is no ground of objection to our experience derivable from the position of the child. But we have been charged with arriving at this conclusion through the medium of premises whose anatomical accuracy has been questioned, namely, that the heart being heard in such a position, requires that it should occupy a different situation in the foetus from what it does in the adult ; now, although we had not argued the matter, but merely stated a fact, still we would apprise Dr. Johnson, that if the heart is situated as much at the left side in the foetus, as in the adult in Edinburgh, it is not so in Dublin.

We regret that we have felt ourselves called on to adopt a tone which we should have gladly declined, but the importance of the subject left us no alternative ; we felt ourselves the advocates of a highly beneficial practical guide, in one of the most embarrassing situations in which a medical man can be placed, we had experienced its value, and we confess that it required more temper and philosophy than we claim, patiently to lie under the imputation, that we had been the advocates of a particular practice, sustained alone by evidence of our senses, and that that evidence had misled us, or, at least, was encompassed by so much uncertainty, as to neutralize its value. In conclusion, we would recommend Dr. Johnson to bestow a little time and labour to acquire a knowledge of this particular application of the stethoscope, and sure we are, that when he has become a competent judge of its merits, he will confess that he too hastily condemned what experience has taught him to value.

And if he would afford us an opportunity at the Dublin Lying-in Hospital, we should feel much pleasure in demonstrating to him its certainty.

ART. XIII.—*Cases of Internal Aneurism.* By WILLIAM HENRY PORTER, one of the Surgeons to the Meath Hospital, and County of Dublin Infirmary, &c. &c.

EDWARD LYNCH, æt. 26, a shoemaker, of intemperate habits, was admitted into the Meath Hospital, March 19th, 1833.

He states that ten days previously he was seized with pain in the back and stitches in the chest, more especially towards the lower part of the sternum, in which latter situation he experienced a dragging sensation also. His bowels became constipated at the same time.

These symptoms continued without the supervention of any other during a week, when (on the 16th) he felt soreness low down in the chest on swallowing solid food, which increased to great difficulty of deglutition on the following day, and since the 18th he has taken no solid whatever, the attempt to do so always producing great pain and a sense of weight, followed at first by hiccup and then by vomiting. He suffers from frequent eructations (about every five minutes) of a frothy watery fluid, having sometimes an acrid sour taste, and they seem to afford him some relief from the oppression at the lower part of the sternum. He has no thirst, but has lost his appetite since the dysphagia occurred. There is tenderness over the epigastrium, and the bowels have not been opened during the last three days.

Being desired to swallow a morsel of bread, he did so, but said it stopped in the passage; after repeated draughts of whey it passed down, but not without a good deal of spasm, resembling hiccup. It was not vomited.

On examination, the chest sounded well on percussion every

where, and the stethoscope discovered no sign of disease in the heart or aorta. The action of the heart was a little stronger than natural, but the sounds were healthy. Respiration *feeble*, but pure in the upper part of the right lung; pulse about 90. Ordered to have beef tea for nourishment.

Hirudines viginti epigastrio.

Enemata. Terébinth. foetid. duo.

21st. Has passed a sleepless night, with much pain, hiccup, and eructation. He swallows, however, with less pain.

At the request of Doctor William Stokes, whose patient this man more immediately was, I passed a probang without meeting any decided obstruction: I was, however, sensible of the instrument passing over a soft tumour, but of what nature I could not form the slightest conjecture. I recollect to have mentioned to several of the pupils, the possibility of its being an aneurism, and the awful consequences that must result if the passage of the probang had chanced to rupture it. Ordered to have ice and beef tea.

Hirudines viginti epigastrio et postea emplastrum
vesicatorium.

Enema purgans statim.

Guttæ nigræ gutt. duodecim horâ somni.

22nd. Passed a better night. Yesterday evening he attempted to swallow some stirabout, but vomited it, and also some of his drink. To day he swallows fluids without apparent difficulty, and says he only feels some soreness on commencing the draught. The pain in the back and chest is less; breathing easy; pulse tranquil; tongue clean; bowels free; some desire for food.

23rd. Passed a good night. Swallowing of fluids causes no pain, but a great portion is almost immediately rejected, after occasioning some hiccup. He has not attempted to take solid food since yesterday: complains of pain in the situation of the spine of the right scapula, which he says occurs but seldom,

and generally at the end of a deep inspiration : it imparts a sensation as if the scapula was lifted up. There are no stethoscopic phenomena in this situation, unless the feebleness of respiration already noticed. Ordered ice.

Haust. anod. horâ somni.

24th and 25th. No alteration of symptoms.

26th. Says he is better. Has not attempted to swallow solid food for the last day or two ; on his now making an effort to get down some tea, it produced great distress, and was followed by hiccup, retching, and vomiting of a considerable portion of it. The pain in the back had been relieved by a blister, and there is less oppression of breathing. Thirst and eructations the same ; appetite not at all improved ; pulse tranquil, about 84 ; tongue clean ; bowels open. To have calve's-foot jelly.

27th. Has been free from pain since the last blister, except on swallowing. Complains of weight in the centre of the chest, and has frequent suffocating cough. In an attempt to swallow, he feels as if something stopped the passage, and prevented any thing passing up or down ; this stops his breathing also, and subsides suddenly.

Whilst speaking, a severe fit of retching came on, which continued several minutes, and he threw up some mucus slightly tinged red. He then swallowed a few sups of drink, but immediately rejected about an ounce with the same coughing and eructation, Tongue clean ; heart's action and pulse tranquil ; bowels open. The ice and jelly to be continued.

℞ Aquæ uncias sex.

Syrupi drachmas duas.

Acetatis morphiæ granum.

℥ Divide in partes quatuor æquales, sumat unam quarta quaque horâ.

At 4, P. M., he had an attack of cough and vomiting, in

which he threw up about a pint of florid blood, and died immediately.

DISSECTION.—The trachea and œsophagus being cut across in the neck, the entire of the thoracic viscera, together with the stomach, were removed from the body ; in doing which, no tumour of the œsophagus was observed.

The stomach was distended, and of a dark colour ; on opening it, a large coagulum of blood was found completely filling it.

On slitting up the œsophagus, a clot, much larger than a pigeon's egg, and covered only by the mucous membrane, was seen projecting into it. Its situation was nearly three inches from the cardiac extremity. The mucous membrane had given way in one spot, and thus was furnished the blood that filled the stomach and that which had been vomited. The pressure of this aneurismal tumour had occasioned ulceration on the surface of the œsophagus opposed to it.

On opening the aorta, the pathology of aneurism, as connected with acute arteritis, was beautifully illustrated. The lining membrane was of a bright crimson or carmine colour, varied with small spangle-like patches of a paler and more opaque tint. This vascularity resided principally in the lining membrane, for on stripping off a portion of it, the fibrous tissue, although evidently inflamed, was much paler. The patches above mentioned were caused by depositions of a *soft, white, cheesy substance*, which were either in the lining membrane or between it and the fibrous coat ; it came off attached to the lining membrane.

There were three aneurisms in different stages of progression. One, the largest, communicated with the clot, which had burst into the œsophagus ; the opening into the aorta would admit the point of the little finger. Another, within about half an inch of the former, was about the size of a hazel nut, its opening into the aorta being about the diameter of a crow quill ; its internal surface was smooth, as if lined by the inner coat of

the vessel ; the middle coat terminated abruptly by a thick cellular edge at the opening, and its external covering seemed to be formed of the cellular coat together with the pleura. The third was only in its commencement ; a slight deviation from the level of the lining membrane was seen in the centre of one of these opaque spots, under which the fibrous coat was thinned and beginning to be absorbed.

The larger tumour had made pressure through the œsophagus on the right bronchus at its posterior part, and thus caused the feebleness of respiration observed during life in the right lung.

The lungs were healthy : the heart paler and softer than natural.

CASE 2.—Patrick Walsh, æt. 26, a carman, of intemperate habits, admitted into the Meath Hospital July 23rd, 1832. A few days previously, he had applied amongst the extern patients, and was brought to me by one of the pupils, who, from his sibilous breathing and almost total loss of voice, imagined it to be a case of cynanche laryngea. A very slight examination sufficed to shew that the cause of his suffering was not in the larynx, and I desired that he should be referred to Doctor Stokes, in order that his chest might be accurately examined by the stethoscope. However he went away, and returned on the day above mentioned with the following symptoms :—Face puffy and tumid ; neck much swollen, apparently from serous infiltration ; the jugular veins turgid and tortuous ; there is no œdema of the extremities ; he has frequent, short, bronchitic cough, with frothy expectoration, and complains of stinging pain in the right shoulder, shooting down the breast, and frequently catching his breath ; the cough and dyspnea are always worse at night. Sleep bad, broken, and accompanied by frightful dreams. Appetite very good ; some thirst ; tongue clean and moist ; bowels regular ; pulse 100 and equal, perhaps a little more feeble in the right arm than in the left ; slight pain on pressing the larynx, and some difficulty of swallowing, which he attributes to the tumefaction of the neck.

Stethoscopic phenomena.—Impulse of the heart heard very loudly over the entire chest, but no ‘bruit de soufflet’ discoverable in any part of it. The anterior portion of the chest sounds dull generally, but particularly in the right subclavian region, where there is feeble respiration, and some sonorous rale. In the right acromial region there is distant mucous rale, with tracheal respiration; over the whole right side respiration is feeble; it is puerile over the left lung; posteriorly the chest sounds clearer. On laying the hand upon the chest, no increase of action in the heart can be perceived.

History.—He states that he has had an habitual short cough for the last four years, but that within the last ten days it has become greatly aggravated. He has also been subject to dyspnœa on exertion, and palpitations for the same space of time: he never spat blood, nor knows he any cause for his ailment, unless a fall on his right shoulder some years ago.

This man remained in the hospital only five days, during which he was treated with mild aperients, small bleedings, and pills of calomel, squill and digitalis; by the use of which he was so much relieved that he refused to remain longer. He accordingly departed, having been previously warned of the probability of a sudden death if he resumed his former dissipated habits. In the course of a very few days his symptoms returned, and he applied at another hospital, in which he remained little more than a fortnight when he dropped dead while exulting in the prospect of some anticipated pleasure.

Dissection six hours after death.—On opening the thorax, a large tumour presented itself, extending from the diaphragm to the level of the lower border of the first rib on the right, and stretching across the upper bone of the sternum to its left side, where it terminated. The vena innominata crossed the front of it, and must have suffered compression, so closely did the tumour approach the sternum. The tumour was evidently formed of the pericardium, into which the aneurism had burst by a small valvular opening, of size just sufficient to admit a quill,

and thus the bag became distended with coagulated blood and serum. The aneurism *seemed to be a true one*, and to be formed of the aorta dilated as far as the origin of the left subclavian artery; the dilatation commencing at the very root of the vessel, where it measured three and a half inches in diameter, and gradually diminishing to its termination. The lining membrane could be traced throughout, and under it was much soft ætheromatous substance. The coats of the artery were in many places become extremely thin, and the right lung, greatly compressed, especially at its superior part, adhered throughout to the sac.

CASE 3.—On the 11th August, 1827, I was requested by a late eminent physician to see a poor person in Michael's-lane, who had been a dispensary patient of my own, and who was suffering under the most urgent symptoms of dyspnœa. He was but twenty-four years of age, a nailor by trade, a most incorrigible drunkard, and his mode of living might be estimated by the squalid wretchedness of the apartment in which he lay. He sat rather than reclined on his bed of straw, supported by a stool behind; his arms extended; his hands clenched; his chest heaving convulsively; his face pallid and swollen; his lips transparently blue; his eyes staring, and his entire body covered with profuse perspiration. I had been sent for to perform tracheotomy, under the idea of its being a case of acute cynanche laryngea; but the disease had already lasted seven days, gradually becoming worse, it is true, yet acute affections of the larynx seldom spare their victims so long. His respiration was sonorous and laboured, but the trachea was not moved rapidly up and down the neck. Pressure on the larynx externally gave no pain whatever, and on passing the finger into the fauces, the epiglottis could be felt of its natural size and texture. Never having been very expert in the employment of mediate auscultation, and at that time not placing implicit reliance on it, I could not derive any assistance from it, yet doubting that it was a case for operation, I wished to decline it, and having recom-

mended some powerful antispasmodic medicine, promised to see my patient in the evening again.

He died at 5 o'clock, P. M., with every symptom of oppressed brain, as caused by protracted strangulation.

Dissection 14 hours after death. The larynx and trachea in the neck appeared perfectly healthy; the thorax was then opened; the lungs were of the usual colour, but did not collapse so much as in general they do. On being cut into, the cells were found loaded with a reddish frothy mucus. On examining farther, a small tumour was observed between the trachea and the œsophagus, just below the root of the neck, which proved to be an aneurism of the arch of the aorta, springing from between the left carotid and subclavian, and seeming to involve the origins of both vessels. Its size was about that of a very large walnut, but with the sternum removed, and in the collapsed condition of the parts, it could not be ascertained, whether the pressure it must have exerted on the trachea was sufficient to cause suffocation and death. However, there was no other mode of explaining it.

The aorta, on being slit open, exhibited its internal coat of a bright pink or rose colour, mottled with a vast number of specks of a paler hue, having very much the appearance of earthy depositions; they were, however, soft and steatomatous. The opening into the sac was perfectly smooth, as if the lining membrane had been prolonged into it, but the sac itself was not cut into, nor the structure of its walls examined.

It is remarkable that this patient did not suffer from dysphagia; at least the symptom was never mentioned to me.

CASE 4.—Mary Collins, æt. 34, admitted into the Meath Hospital February 5th, 1833, under the care of Mr. M. Collis. She had been generally subject to palpitations of the heart, and about a month since perceived a small tumour at the upper part of the sternum, attended with considerable pulsation, which she felt all over the chest. She also experienced very great pain from the commencement of the disease, and in two or three

days was seized with sibilous breathing, cough, and occasional paroxysms, threatening suffocation. On admission, the tumour, occupying the inferior third of the neck, above the right sterno-clavicular articulation, was found to have increased to the size of a small orange, and by its pressure on the trachea was sufficient to explain the orthopnea, the cough, and the other symptoms of difficult or impeded respiration with which she was harassed. The pulsations can be both seen and felt, attended with a peculiar trembling motion, and causing exquisite pain. The bruit de soufflet heard distinctly over the entire chest, but more remarkably on the left side, and above the left clavicle; the arteries of the right arm beat fully and strongly, those of the left feebly in comparison.

This patient was treated with digitalis and hyoscyamus, small bleedings, and mild aperient medicines, but without the smallest benefit. Although the tumour did not appear to increase externally, the symptoms of dyspnoea became every day more urgent, and on the 26th (just three weeks after admission into the hospital) she died, evidently suffocated.

Dissection.—The heart apparently healthy; if there is any difference from its usual appearance it is that it is smaller and firmer in structure. The ascending portion and the arch of the aorta greatly dilated; its lining membrane inflamed, of a deep red colour, and easily detached from the fibrous coat underneath. Between these structures there were numerous specks or patches of a soft and white deposit, which separated with the lining membrane on tearing it off. The fibrous coat was also evidently inflamed, and of a rose-pink colour.

Where the arteria innominata is given off, but distinct and separate from it, the communication existed between the aorta and the aneurismal tumour. It was sufficiently large to admit the little finger, round, perfectly smooth, and apparently covered by a prolongation of the lining membrane. The sac seemed to have been formed by a dilatation of all the coats of the aorta at this particular spot, and to determine the question as to its being *really a true aneurism*, the structures were ac-

curately examined. The deposit already mentioned, as lying under the lining membrane of the aorta, was also seen throughout the entire extent of the sac, indicating that the same tissues existed in both, and that the aneurism was formed of a distended portion of the aorta apparently deprived of its elasticity.

These cases appeared interesting, as tending to illustrate the condition of arteries, the seats of aneurism, and probably directly aiding in the production of the disease. The fact that internal aneurisms may exist for a length of time without being recognized, and produce symptoms so far resembling other affections, as to be mistaken and treated for them, has long been known, and can be easily explained, by reflecting on the mechanical pressure to which the adjacent organs are subjected, and the new positions and situations in which they are placed. So far, therefore, the above cases can be of little value, except as shewing, that with the improved means of investigating diseases of the chest, afforded by the stethoscope, the same difficulty of diagnosis exists, and that the instrument, even in the most apt and experienced hands, is here too frequently useless; but the pathological state of the coats of the vessels, as ascertained by dissection, seems to be of considerable importance.

Aneurism, although frequently appearing first after some violent exertion or strain, is not a disease of such common occurrence as (considering the laborious habits of the great mass of the people) it should be if it was even generally to be referred to this cause, and it would therefore appear that some previous condition of the vessel must exist predisposing to the disease, and facilitating its production. Inflammation of the artery, as exhibited in the case of Edward Lynch, by occasioning the ulceration or absorption of the fibrous coat, evidently tends to such a result, and perhaps it has the same effect by diminishing or altogether depriving it of its elastic properties. Not long since, in examining a femoral artery which had been tied for the cure of popliteal aneurism, I found it inflamed, of a wider

calibre than natural, and almost deprived of its elasticity, for it gave way and tore under a force that would merely have distended a healthy vessel. In like manner the arteries of Lynch and Collins (which are preserved in the pathological collection in Park-street) easily broke down under a very trifling extending force, which would not have injured any aorta not the seat of disease. In the cases above mentioned, the pains experienced previous to the development of those symptoms, which may be considered as more immediately occasioned by the aneurismal tumours, indicate that the aortæ were attacked with inflammation before their coats gave way and the fatal diseases were established.

Thus, perhaps, not only the dilatation of the artery in every direction, but the more partial expansion of one particular spot into a pouch or bag may be explained by its loss of elasticity. If a bag of elastic gum be forcibly distended with air, beyond what it can bear, it will become thin in one or more places, and small pouches will be formed which do not disappear on the removal of the distending force, and it may be that a similar result shall take place from the blood being forced against an aorta deprived of its elasticity. In the case of Walsh, the aneurism "seemed to be a true one," and in that of Mary Collins, I entertain no doubt whatever, that the aneurismal sac was composed of the same or similar structures with the diseased aorta. Some years ago I had an opportunity of seeing an aneurism, about the size of a small bean, in the basilar artery, the coats of which contained the same kind of earthy deposition that pervaded all the other arteries in the body, and which, therefore, I considered to have been formed by dilatation only. However, infrequent of occurrence, therefore, it seems probable that "the true aneurism" occasionally is met with, that it runs the same course, and produces the same distressing and dreadful consequences as the false; but whether I am right in attributing either or both to a loss of elasticity produced by inflammation in the vessel, remains still to be proved by further observation.

ART. XIV.—*Cases of Amputation in Spreading Gangrene*.

Collected by WILLIAM HENRY PORTER, Surgeon of the Meath Hospital, &c. &c.

IN a paper published by Mr. Crampton in the fourth number of this Journal, some observations occur on the discrepancies that exist in the practice of surgery, not only throughout Europe, but in the different cities of the United Kingdom, and of the value that would attach to surgical reports in correcting such an evil, provided they are given with fidelity, and authenticated by that publicity which is derived from hospital practice. In the illustrations of these remarks, the subject of amputation in spreading gangrene holds a very prominent position, but it might have been further stated, not only that an opposite mode of practice obtains in various countries, but that even in this city, until very lately, discordant opinions prevailed on this subject, and perhaps even now there are some who regard the operation as a hazardous, if not an unjustifiable experiment. With a view of contributing to settle professional opinion on a subject of such great importance, I have collected some of the cases that occurred in the Meath Hospital, where the practice of amputation, under such circumstances, has been adopted for many years, (the first case that I recollect being in the year 1818,) and I consider they may prove valuable, not only in shewing that the operation is not so fatal as has been generally supposed, but in demonstrating, by post mortem examination, that where it has failed, it has not been from the cause to which such failure has been usually attributed, namely, the seizure of the stump by mortification.

It is scarcely worth inquiring, at what period the doctrine came to be established which forbade amputation in cases of gangrene, until this process had not only ceased, but a defined line of separation had been drawn between the living parts and the dead. That the opinion was not always very confidently ascer-

tained, would appear from a passage in Wiseman,* whose surgery of gun-shot wounds Guthrie acknowledges to be correct ; but, however it may have been departed from by practical men, and however frequently surgery may have been rendered available to the preservation of life, after local gangrene had succeeded to severe injuries, still the student, whose hospital experience must be limited, and whose knowledge consequently is chiefly derived from books, must be excused if he should lean to a doctrine so confirmed by authority,† and regard an operation, under the circumstances, as unscientific and inadmissible.

* “ If after some days the wound do not digest, but inflame and gangrene, and the gangrene do not yield to your applications, as hath been proposed in gangrene ; then, as in sphacelus, you are to proceed with the extirpation of that rotten member while the patient is free from delirium, and hath strength to bear the operation.”—*Chirurgical Treatises by Richard Wiseman*, p. 443, edit. 1696.

† “ When inflammation, irritation, and tension have taken place, and when the air admitted freely into the tela cellulosa has begun to exert its pernicious influence, it is too late ; an operation then, instead of being beneficial, would prove destructive.”—*Pott's Works by Earle*, vol. iii., p. 207.

“ Till, therefore, the adhesive inflammation comes on, and a distinctly marked separation of the dead from the sound parts takes place, amputation is in few, if in any, cases of mortification admissible.”—*Thompson on Inflammation*, p. 582.

Sabatier mentions among the cases that require amputation ‘ Le sphacèle complet et borné.’

“ L'Amputation est indiquée toutes les fois que le membre est privé de la vie, ou qu'il est gangrené dans une grande étendue, soit à la suite d'une violente commotion qui a produit la stupeur ou la mort du membre, soit consécutivement à une inflammation interne : dans ce cas, il faut attendre, pour pratiquer l'amputation que la nature ait établi la ligne de démarcation entre le vif et le mort.”—*Dictionnaire des Sciences Medicales*, art. *Amputation*.

“ Mais on ne doit y avoir recours” (i. e. amputation) “ que quand la gangrene est borné et qu'il est survenu un cercle inflammatoire qui forme la ligne de démarcation entre le vif et le mort. On a cru qu'on pourrait arrêter les progrès de la gangrene, en pratiquant l'amputation dès que ce mal cruel commence à se manifester ; mais l'expérience supérieure à tous les raisonnemens démontre le contraire et on a vu plusieurs sujets chez lequel cette opération a été infructueuse parceque on s'est pressé de la faire avant que la mortification fut borné.”—*Boyer, Traité des Maladies Chirurgicales*, tom. iii., pp. 77, 78.

And if he feels any surprise, that the principles of his profession should be so variable and fluctuating, that what is received to-day may be abandoned tomorrow, let him recollect that the amputations of the olden time were in many instances undertaken really too late ; that they were not so quickly or so dexterously performed ; that the stump was not so well dressed, or the patient so judiciously managed ; in a word, let him bear in mind the influence over the results of any operation that the improvements in modern surgery must of necessity exert.

The division of mortification into the idiopathic and traumatic, as laid down by Larrey, is of the greatest possible importance, inasmuch as it is in cases of the latter that amputation of the limb promises to be most successful. But it will be necessary to consider the term as admitting of some latitude in its interpretation, inasmuch as a limb has been removed with the best results, in cases of mortification occurring in two or three months after the artery has been tied for the cure of aneurism, and again where it has originated in a fungoid tumour of the periosteum, both of which may be regarded as instances nearly of idiopathic disease. Nay, I am in possession of a case which occurred in an hospital in this city where amputation succeeded, although many would have regarded it as a specimen of Pott's gangrene of the toes and feet. On the other hand, if the knife were to be applied to every limb attacked by mortification, succeeding to compound fracture, or other severe injury, without reference to the patient's constitution, his condition of life, and previous habits, there can be very little doubt that the consequences would lead almost to a re-establishment of the old opinion, that nothing should be done until nature had detached the living parts from the dead. Here, then, it is obvious, that a vast deal must rest on the sagacity and experience of the surgeon himself, called on to make an election that is to decide on the patient's life, in the first instance, and on his future comforts for ever afterwards, and obliged to come to a decision almost

immediately, for frequently the delay of an hour makes a most important difference in the case.

It certainly is most difficult, if not impossible, to convey by words an idea of the symptoms and characteristics of a patient that would render him an unfavourable subject for operation, but there are some circumstances too obvious not to be remarked. Persons who have remained for any length of time in a state of irritable excitement between a recovery from the first effects of the shock, and the supervention of inflammatory symptoms, rarely survive amputation; and this condition of irritation is frequently observed in patients of very opposite appearance and temperament. Sometimes it seems to be derived from individual idiosyncrasy, often from anxiety of mind as to the patient's family or fortune, but in the vast majority of cases from previous habits of intemperance and excess. Thus the full and plethoric man, who has fed highly and lived in indolence, is equally a bad subject for amputation, with the withered and pallid wretch, who, having but miserable diet and clothing, endeavours to indemnify himself by drinking whiskey whenever it can be procured. The former of these may live for eight or ten days after the operation, and then die of phlegmonoid erysipelas of the stump, or inflammation of the veins; the latter generally sinks under the operation, as if his system was incompetent to the slightest effort, and perishes in the course of a very few days, perhaps of a few hours. Unquestionably, if a comparison be instituted between the number of recoveries after amputation in spreading gangrene, and from the other causes for which it is performed, the balance will appear to be greatly against the former, but that is not to prevent a surgeon from offering a doubtful remedy, rather than leaving his patient to almost inevitable destruction. In the course of many years I have seen but one patient recover from traumatic gangrene, to whom the operation had been proposed, and therefore I think that if it can be proved that amputation has so far been successful as to offer a reasonable chance of preserving a patient's

life, a most important improvement in surgery must be deemed to have been effected.

It is of the utmost consequence that this point in practice should be decisively settled in one way or the other, because it frequently happens that mortification supervenes on injuries that could not warrant an opinion of the slightest probability of such a result. Within a very short space of time I have seen two cases of gangrene following on simple fracture, at least on fracture unaccompanied by external wound, in one of which the limb was extensively gorged with blood placed in situations distant from the larger vessels, the source of which could not be ascertained.* In another case, the gangrene occurred six weeks after the accident, the patient meanwhile going about seeking relief, and by some considered as an impostor. All compound fractures, unless the limb is so much injured as to render recovery obviously impossible, are in the first instance treated with a view to its preservation ; and yet a great number of them are attacked by gangrene in the event. In these cases there is no time for deliberation. The question must be determined at once whether the limb is to be cut off, or the patient left to take his chance of the gangrene ceasing spontaneously. Larrey would remove it at once ; so, probably, would Sir A. Cooper ; and Guthrie, in his work on gun-shot wounds, seems to lean towards the same opinion ; but that is not sufficient, unless the principle be practically and generally established ; and I can easily conceive a young surgeon standing idly over such a case, exhibiting bark and wine, and applying a fermenting poultice, and at the same time satisfied by a host of written au-

* In one of these cases the knee joint was filled with a fluid resembling uncoagulated blood, although not a trace of lesion could be discovered in the synovial membrane. A similar appearance was observed in a case of compound fracture lately, and in neither was there any symptom giving the slightest indication of this condition of the joint. I am not aware of this result of severe injuries having been hitherto noticed.

thority, and, perhaps, by the opinions of his professional friends, that his practice is quite correct. But it has happened that cases of a very unpromising nature have recovered without the intervention of the knife, instances of which will recur to the recollection of every experienced surgeon; and the same thing has occurred in other diseases as well as in mortification. But that is not the question. Are the early symptoms of mortification as indicative of its future progress understood? Are we acquainted with that kind of gangrene which will be likely to prove thus limited? or can we particularize the constitution that will endure the frightful disturbance that always attends on the death of a part? Until our knowledge becomes so extensive, the sole point to be determined is, amongst a given number of cases amputated, and of others left until the process of separation is completed, what will be the proportion of recoveries. It is from experience alone that the question can be answered.

If amputation is determined on, it should be performed with the least possible delay, because the gangrene may spread with such rapidity as to cause the operation to be performed very high up, and, consequently, involve an unnecessary loss of a greater portion of the limb, and also because the constitutional symptoms attendant on mortification are not such as a patient can long endure, and their continuance, even for a few hours, may render the success of any operation very precarious. This latter consideration is of great importance, for although I have seen the incision made in a part where the skin was discoloured, and the cellular tissue loaded with a semigelatinous kind of serum, without preventing recovery afterwards, yet I am not aware of a case proving fortunate, where the system had previously been materially engaged; of course, however, where it can be done, it will obviously be most prudent to perform the operation in a sound part, and even, if possible, to interpose a joint between it and the apparent boundary of the disease. Again, every person conversant with the condition of a patient

suffering from spreading gangrene, must be aware of the importance of having the operation performed with as much rapidity as shall be consistent with safety, but still a consideration of more moment is, that very large flaps, both of integument and muscle, should be left—larger than even in cases where the operation had been performed on the field, or immediately after the receipt of the injury. It is needless in these cases to look for union by the first intention, which (as far as I know) never takes place ; on the contrary, there are usually abscesses and sinuses formed in the stump, discharging from time to time masses of ragged, sloughy, cellular tissue, with profuse suppuration, and general wasting of the remnants of the muscles, so that on being eventually healed, the stump is much smaller in size than the corresponding part of the other limb. During the progress of the case, too, it will be necessary to support the patient's strength with more care and attention than is requisite in cases of amputation from any other cause. According to my experience a liberal use of wine is always indispensable.

In the relation of the following cases, it will be seen that I have, as far as possible, avoided prolixity of detail, the object of their publication being to shew, that they were cases of gangrene extending itself over the limb at the time the operation was performed ; that several of these recovered, and that where the result was not so fortunate, it was to be attributed, not to the mortification of the stump, but to circumstances that might have occurred after amputation, performed for the removal of any other disease.

CASE 1.—*Mortification of the Leg, from rupture of the posterior tibial Artery—Amputation—unsuccessful.*

March, 1820. A man applied amongst the externs at the Meath Hospital, complaining of deep and intense pain in the right leg, occasioned by a severe blow inflicted on the back of it. On examination there was no appearance of injury, no swelling, no discoloration, nor even tenderness on pressure. He

scarcely exhibited the smallest lameness, and his case attracted very little attention.

Displeased at this neglect, he applied at other hospitals, at some of which he was regarded as an hypochondriac, and at none was the case deemed to be of importance.

About six weeks after his first application at the Meath, he felt something give way within the leg, which immediately began to swell. In the course of a few hours it had attained a great size, was pale, shining, and tense, yet retained the impression of the finger on pressure. His pulse very small and quick, tongue brown, he was thirsty, and had vomited several times, his face was pallid, and he had a wild, yet dejected expression of countenance. He was admitted into the hospital under the care of the late Mr. Thomas Roney.

On the following day matters had assumed a very different appearance; the leg was livid, cold, and insensible; the skin had burst, and a large coagulum of dark blood protruded; the lower half of the thigh was mottled, of a dark amber or brown colour, and emphysema had extended nearly to the groin. He acquiesced at once in the proposal of having the limb removed, which was performed by Mr. Roney, but the result was not fortunate. The irritative fever still continued; the stomach rejected every thing both of food and medicine, and he sunk and died about 36 hours afterwards.

It is unnecessary to allude to the dissection of the stump, farther than to state, that it exhibited not the least appearance of gangrene.

On examination of the limb, after removal, the posterior tibial artery was found ruptured, and a large quantity of blood under the deep fascia that lies behind it. A ragged sloughy aperture was seen in this fascia, and the limb in every direction extensively injected with blood. It seemed as if the artery had been injured by the original blow, and had bled under the fascia, which subsequently gave way and burst, when mortification rapidly ensued.

CASE 2.—*Mortification from compound Fracture—Amputation—unsuccessful.*

September, 1822. A gentleman's servant, named Toole, whilst cleaning the outside of a drawing-room window, slipped and fell into an area, inflicting a compound fracture on his right leg, with protrusion of the bone. He was admitted into the Meath Hospital under the care of Mr. Hewson, the fracture reduced, the wound dressed, and for the first two days he seemed to suffer but little. On the third day a line of blue vesication appeared round the edges of the wound, yet there was very little constitutional disturbance, nor did the gangrene appear disposed to spread.

On the eleventh day after the accident this slough was thrown off, leaving a large wound, with the broken bone exposed and bare at the bottom of it. This wound never suppurated; it was dry, its edges everted, and the dressings adhered to it. On the thirteenth day, another line of vesication appeared on its edge, but it was hoped that this, like the other, might be thrown off, and that an opportunity might be offered of removing the limb after the line of separation had been formed. However, during the night he was extremely restless, complained greatly of tension and pain in the limb, vomited almost incessantly, and spoke sometimes incoherently. In the morning the mortification was found to have extended more than a hand's breadth. The lower third of the thigh was discoloured. His pulse very quick, but small and feeble. Tongue quite dry, brown and chapped. Cold sweat on his face and breast, with a remarkable expression of sinking and debility. Amputation was performed, but without avail. The vomiting continued, and at night he fell into low muttering delirium, out of which he never recovered. He died exhausted on the following day, about twenty-eight hours after the operation. The stump was unaltered from the previous day.

CASE 3.—*Fungous Tumour of the Periosteum—Gangrene—Amputation—successful.*

Peter Murphy, æt. 42, a labourer, admitted into the Meath Hospital, May 29th, 1833, under the care of Mr. M. Collis.

He has had a painful tumour in the leg for the last eight months, deep seated and apparently attached to the bone. Into this an incision had been made about two months since, from which he derived some temporary relief, but in a short time a fungous tumour protruded through the wound, which increased rapidly in size. On admission this tumour was observed to occupy the middle of the leg, about six inches in length and five in breadth, and through the incision a fleshy fungus protruded about the size of a walnut. The tumour was smooth, elastic, and imparted a sensation as if it contained fluid.

June 3. (The fifth day after admission.) The fungus had increased to an enormous size, and looked black and sloughy. A most profuse discharge of an abominably fetid odour was poured out, whilst the limb, as high as the knee, was swollen, mottled, and œdematous. Amputation was performed on this day.

For more than three weeks this man was in a most precarious condition, low and weak, suffering from loss of sleep, startings in the limb, and very profuse perspirations. He was supported by wine and porter, and took bark and opium. There was not the slightest attempt at union by the first intention, and on the 24th I find the hospital report to state that the granulations were large and unhealthy.

July 7. Very profuse discharge from the stump. He complained of great pain on the outside of the thigh, where a very hard and prominent swelling had appeared. This proved to be an abscess, which was opened by two incisions on the 11th, and continued discharging above a month; after which the stump healed gradually and slowly, and it was not until the middle of September that he was enabled to leave the hospital.

The circumference of the stump measured four inches less than the corresponding part of the other limb.

CASE 4.—*Compound Fracture—Gangrene—Amputation—Favourable progress and rapid recovery.*

June 5, 1833. John Reilly, æt. 30, a servant, received a compound fracture of the leg by a fall from a horse; the bone protruded considerably, and there was smart hæmorrhage. The fracture was reduced on the spot, the limb bandaged, and he was conveyed to hospital, a distance of ten miles. Notwithstanding the utmost care and the most judicious treatment, gangrene took place on the 13th, the leg was enormously swollen, very tense, of a dark purple colour, and mottled almost to the groin. The foot was swollen, œdematous, and cold; the wound in a state of slough. The operation of amputation was performed by Mr. Roney very high up above the knee, but so rapidly had the disease spread, that the incision was made through cellular tissue, loaded with a reddish serum.

It is unnecessary to detail the daily reports of this case, which went on more prosperously than happens in the majority of similar cases. An abscess formed on the right side of the stump on the fifth day after the operation. There never was any appearance of union by the first intention, but the stump granulated well, and healed kindly from the bottom. When discharged from the hospital, on the 12th of August, (within two months after the limb had been removed,) the stump was completely healed, and the bone admirably well covered.

CASE 5.—*Simple Fracture of the Leg—Gangrene—Amputation—Death from Inflammation of the Veins of the Stump.*

Jan. 25, 1833. Quayle Thornhill, a powerfully strong and muscular man, whilst in a state of intoxication, slipped from the flagway and fractured his leg, he was carried to the watch-house, where he remained without assistance during the night, and was thence removed in the morning to the Meath Hospital. The limb was greatly swollen, probably from the awkward

manner in which he was carried. The sharp end of the superior fragment was felt nearly protruding through the integuments: the fracture was reduced, the limb laid on a pillow, and sixty leeches applied.

Jan. 26, 1833. The limb enormously swollen, tense, and elastic, its colour, as far as the knee, being of a deep brown, the foot quite cold. In consultation, amputation was decided on as the only means of preserving his life, which I performed in the usual way, except that it was a little more difficult in consequence of the great size and depth of muscle on the thigh.

Examination of the limb.—There was an oblique fracture of the tibia fully six inches in length, terminating in a very sharp point, about four inches above the ankle joint, and comminuted fracture of the upper end of the fibula, where it was articulated to the tibia. The limb generally was gorged with blood, the fibres of the gastrocnemius and soleus muscles being separated into small bundles by the infiltration. A vast quantity of blood also lay between the soleus and the fascia that lies behind the posterior tibial artery, the source of which could not be discovered by injecting water into the vessels. The anterior tibial nerve, where it passes round the head of the fibula, was completely torn through. The cellular tissue of the limb was loaded with a semigelatinous serum of a red colour. The* knee joint was completely filled with fluid blood, although there was no lesion of the synovial membrane.

This patient at first seemed to be doing well, but on the fourth day after the operation he became excessively irritable, moaned, and sometimes screamed whilst the stump was dressed. These symptoms increased; his pulse was always small and very quick; thirst insatiable; sleep very disturbed. His face assumed an expression of anxious despondency, and he con-

* I have before me the notes of a case of compound fracture, in which a similar effusion appeared in the knee joint. Amputation was performed after gangrene took place, and the patient recovered. I do not, however, think myself at liberty to notice the case further, as it occurred in another hospital.

stantly expressed a conviction that he should not recover. He died on the 8th February.

Dissection of the stump.—The femoral artery was found diminished in size, its internal coat being corrugated into regular folds parallel to each other. The lining membrane of the femoral vein very red and vascular, the vessel being filled with masses of lymph and purulent matter. There were two large cavities, one on each side of the bone, from which flowed fetid purulent matter in abundance. The muscles greatly wasted, and their wounded surfaces, as well as the inside of the flaps of skin and cellular tissue, thickly covered with a green tenacious lymph. There was no attempt at granulation.

CASE 6.—*Compound Fracture of the Leg—Gangrene—Amputation—successful.*

Anne Reynolds, æt. 27, admitted into the Meath Hospital Feb. 27, 1832, under the care of Mr. M. Collis. She had been thrown from a window by her husband, (both having drank rather freely,) and a compound fracture, with protrusion of the bone inflicted on her right leg, about a hand's breadth above the ankle. The fracture was reduced, the limb bandaged up, and every attempt made to preserve it, but in vain, for on the fourth day after the accident, gangrene was fully established. The foot and all the leg, below the wound, was cold and devoid of sensibility; the edges of the wound of a dark livid blue colour; the discharge profuse and abominably fetid. The leg, as far up as the knee joint, mottled, and of a dark brown colour, œdematous, and boggy. In consultation, it was determined to amputate, which was performed in the usual manner by Mr. Collis. Nothing remarkable was observed during the operation, except that the stump was very dry, scarcely a drop of blood oozing from the divided surface.

Examination of the limb.—The lower third of the fibula broken into numerous fragments; the tibia broken through about two inches above the ankle, and split longitudinally, the

fissure running down and communicating with the joint; the wound soft, black, and putrid; very fetid pus about the broken ends of the bones. The subcutaneous cellular tissue infiltrated with a reddish coloured serum, and air as high as the tubercle in front of the tibia.

The stump for some days appeared to be going on very well, but on the seventh after the operation, it opened in its entire extent, discharged a quantity of very fetid pus, and it became evident that abscesses were formed. This discharge continued some weeks, and granulation proceeded but slowly. She was supported by broths and a liberal use of wine, and took quinine and opium. The wound was skinned over on the 28th April, and she left the hospital well on the 6th May.

CASE 7.—Popliteal Aneurism—Ligature—Secondary Hæmorrhage—Subsequent Gangrene—Amputation—Recovery.

Thomas West, æt. 27, admitted into the Meath Hospital on the 7th August, 1831, with a circumscribed popliteal aneurism in the left ham, for which the usual operation of securing the femoral artery in the upper third of the thigh was performed on the morning of the 13th. Nothing remarkable occurred until the morning of the 22nd, when blood was observed to issue from the wound, and he lost about five ounces when the hæmorrhage was controlled by cold applications; it recurred two or three times, when the wound was opened to the bottom, a graduated compress introduced, and secured by an instrument devised by Mr. Crampton, which pressed directly on the compress, without interfering with the venous circulation of the limb. It is foreign to our immediate purpose to enter minutely into the details of this part of the case however interesting, suffice it that the bleeding was stopped, the ligature came away on the 1st September, and he left the hospital with the wound quite healed up, but complaining of pain in the sole of the foot, heel, and instep, which is relieved only by gentle friction.

Oct. 8th. Readmitted for swelling and stiffness of the knee, with intense pain, which were removed by the use of calomel and opium.

12th. An abscess formed at the upper and anterior part of the leg, which was opened, and discharged healthy pus.

15th. Another abscess formed near to, and apparently communicating with the ankle joint. At this time, the slightest attempt to move, or even touching the limb, gave him the greatest pain.

Nov. 9th. On this morning a spot of a dark colour, undefined and doughy, appeared on the dorsum of the foot near the toes.

15th. The great toe, the second, and part of the third, are affected with mortification, as is also the greater part of the foot. The remaining toes are of a dull purple colour at their extremities, and he complains of intense pain. From the roots of the toes to the instep there is a patch of a light brown colour, dry, and apparently below the level of the surrounding parts, which are œdematous, swollen, and deprived of their cuticle. The œdema reaches to the knee. Amputation was decided on, and performed in the usual manner high up in the thigh.

Although performed under such unpromising circumstances, few operations could be more successful, the stump granulated healthily, and the patient left the hospital, for the second time, in the course of the sixth week afterwards.

ART. XV.—*Case of Wound of the Gluteal Artery, and an Account of the Operation for securing it.* By RICHARD CARMICHAEL, M. R. I. A., one of the Senior Surgeons of the Richmond Surgical Hospital.

As considerable apprehensions still possess the mind of surgeons respecting the difficulties of securing the gluteal and sciatic arteries when wounded, a detail of the circumstances attending the following case may be of service, as it will tend to

remove groundless prepossessions, and at the same time evince that any surgeon acquainted with the anatomy of the parts, and possessing a cool judgment, may, without dread, boldly cut down upon either of those arteries, and secure them with the greatest facility. There is, no doubt, a considerable depth of parts to be divided; but this division can be safely and easily effected, by merely following *the direction of the fibres* of the great gluteus muscle over the site of the sciatic notch, care being taken to make this division sufficiently large to admit of the easy removal of the coagulated blood: which being done, will expose clearly to view the mouth of the bleeding vessel. It is, probably, from the lively picture which John Bell has drawn of the formidable nature of this operation, that practitioners have derived their apprehensions of danger; indeed the dramatic sketch he has left us of the case of the leech-catcher is enough to appal the most stout-hearted. His vivid descriptions of an incision of "eight inches," afterwards enlarged to "*two feet in length*," (we are not informed in what direction,) the "eight pounds of coagulated blood" removed from the sac, the deluge of fresh blood which followed with a "loud whizzing noise," and the apparent extinction of life in the patient, with the vain efforts of the surgeons to stem this rapid torrent by pressure on the abdominal aorta, together with a tedious convalescence of seven months, attended with exfoliation of the bones, are all circumstances so truly terrific as to make an indelible impression on the mind of the reader, and which, I acknowledge, was not effaced from mine, although I had not read the work since its first publication, probably a period of upwards of thirty years. It was not then without considerable apprehensions, and the collected resolution of a man determined upon some mighty enterprise, that I proceeded to the task thus imposed on me; but in the prosecution of my purpose I was agreeably surprised to find no difficulties to contend with, and that the gluteal artery, even at its root, was secured with almost the same ease as any other artery of equal depth.

My friend Mr. Guthrie, in his excellent practical work on "Diseases and Injuries of Arteries," which every surgeon should have at hand, seems, as well as myself, not to have altogether escaped from the prejudices of early education. In detailing the interesting case of Colonel M'Pherson, who received a musket ball in the hip, we find that the operation was performed by Staff Surgeon Murray, but too late to save the patient, as he was previously worn out by frequent attacks of hæmorrhage. "It is evident," says Mr. Guthrie, "that the operation ought to have been done in the first instance. The only cause of delay arose from the thickness of the muscular parts to be divided, and the dread which at that period filled the minds of most surgeons upon this subject, a dread which, it is to be hoped, will be for the future abandoned."* Again, he observes, in speaking of the operation, "In all cases of aneurism of the gluteal and sciatic arteries, the internal iliac should be tied, instead of an operation on the part itself."† Now, in the great majority of instances, in which aneurism occurs of either of these arteries, it is most likely to be, as in the case I am about to detail, of the diffused kind, owing to a punctured wound by a pen-knife, or some similar sharp instrument. Mr. Guthrie, I am aware, never meant by the above passage to recommend, in such instances, the adoption of the truly formidable and dangerous operation of tying the internal iliac, in preference to one comparatively far less hazardous, and at the same time likely to prove more efficacious. Yet in the subsequent case, his authority was adduced by well informed surgeons as a reason why I ought to pass a ligature around the internal iliac in preference to the gluteal artery. When Mr. Guthrie's work comes to another edition, it would be well to remove all ambiguity upon the point in question.

I shall now briefly detail the circumstances of the case, first

* Page 292.

† Page 377.

premising, that previous to operation it was fully ascertained that pressure on the abdominal aorta was capable of obstructing the circulation through the inferior extremities, a matter of considerable importance to be assured of, in cases of wounded arteries, close to the trunk, in subjects not overloaded with fat ; but which, it will be found, was not of any use in the present instance, as hæmorrhage during the operation was readily suppressed by the point of the finger pressed upon the mouth of the bleeding artery.

On the 19th of the present month of September I was called upon to see Master West, aged 17, who, eleven days before my visit, received accidentally a wound of a pen-knife on the right hip, which penetrated as far as the handle would permit it to go ; an immediate gush of blood followed, so strong as to dash against the wall of the chamber, near to which he was sitting. The hæmorrhage was, however, easily suppressed by Mr. Atkinson of Gardiner-street, who resides within a few doors of the patient.

Three days afterwards the patient imprudently rose from his bed, walked down stairs, but had scarcely returned to his room when he felt an acute pain in the hip, followed by immediate tumefaction, which increasing from day to day, I was called upon to see him. On examination I found the entire right hip considerably swollen and firm to the feel, the skin was slightly discoloured, having somewhat the appearance that a bruise would present. The trochanter could scarcely be felt, so great was the tumefaction. On measuring the two hips, by passing a tape between the thighs to the anterior superior spinous process of the ileum of each, the affected hip measured two inches more than the sound one ; the upper part of the thigh was also so much swollen, that its circumference measured more, by an inch and a half, than the other ; the integuments were also discoloured more or less even to the ham. The small cicatrix of the wound was situated about half an inch above the presumed situation of the upper margin of the ischiatic notch,

where the gluteal artery emerges from the pelvis. No pulsation was evident to the eye, even on the most minute examination, but the strong pulsation of an aneurismal tumour was manifested to the ear by either immediate or mediate auscultation. It was evident, therefore, that the tumefaction of the hip did not depend upon the presence of matter, notwithstanding that the patient had been affected with frequent rigors from the period that the swelling took place, accompanied by foul tongue and symptomatic fever, but that it was owing to an effusion of blood, in consequence of a wound of the trunk of the gluteal artery or one of its largest branches.

As I had known instances of wounds of large arteries healing under similar circumstances, although the limb was injected with blood, I deemed it right to give this patient a similar chance before recourse was had to operation. I therefore directed ten ounces of blood to be taken from his arm, as the tumour was painful, and the pulse quick and hard. Draughts containing tincture of digitalis were given every sixth hour, a cold lotion was applied to the tumefied parts, and absolute rest in the recumbent position enjoined. This plan, with occasional opiates to meet pain and uneasiness, was persevered in during five days, but no benefit was derived; on the contrary, the tumefaction of the hip and entire limb was obviously increasing, and the state of the patient was so distressing, that even he himself became anxious for the operation, which was performed on the 24th of September, in the presence of Messrs. Colles, Adams, M'Dowell, Hutton, Logan, and Doctor Brown, who kindly lent me their assistance.

Operation.—The patient being placed upon a table, lying on his face, I commenced the operation by an incision five inches in length, commencing an inch below the superior posterior spinous process of the ileum, and about the same distance from the margin of the sacrum, and continued it in a line obliquely extending downwards to the trochanter major. The gluteus maximus and medius were then rapidly divided, or

rather their fibres separated (as the incision ran in the direction of the fibres) to the same extent as that of the integuments. The coagulated blood forming, the tumour then became apparent through the sac, or condensed cellular membrane with which it was covered. This was divided the whole extent of the incision by running a buttoned bistoury quickly along the finger introduced into the sac, and its contents, consisting of from one to two pounds of coagulated blood were emptied rapidly out with both hands into a soup plate, which it completely filled.—A large jet of fresh blood instantly filled the cavity I had emptied, but the precise spot from whence it came being perceived, I was enabled by pressure with the finger to prevent any farther effusion, while that which had been just poured out was removed by the sponge. It was obviously the trunk of the gluteal artery, just as it debouches from the ischiatic notch, which had been wounded. I endeavoured, but in vain, to secure the artery by means of the tenaculum. I had then recourse to a common needle of large size, and with this instrument was immediately successful in passing a ligature around the bleeding vessel and of preventing all farther hemorrhage. After having waited some little time to ascertain if the artery was perfectly secured, lint was introduced to the bottom of the wound, as it was not likely that union by the first intention would take place between the walls of the extensive cavity which contained the coagulated blood. The patient was then put to bed and an anodyne given to him.

Every thing went on favourably after the operation. On the third day the external dressings were removed; on the fourth, the greater part of the lint with which the wound was filled came away, followed by a flow of matter of a good quality. On the sixth, the ligature came away, as well as the remainder of the lint. From this period the matter continued daily to diminish, and at the time this sheet went to press, (sixteen days after the operation), the patient was completely convalescent, and the wound rapidly healing.

ART. XVI.—*A Case of Erysipelas terminating fatally, with Symptoms of Gastritis, after the Use of a large Quantity of "Morison's Pills."* By SAMUEL BELL LABATT, M. D., Honorary Fellow of the King and Queen's College of Physicians, and formerly Master of the Lying-in Hospital, &c. &c., and WILLIAM STOKES, M. D., one of the Physicians to the Meath Hospital, &c.

THE subject of this case was a gentleman aged about thirty years. He was in good health on the first of September last, but on the evening of that day was exposed to cold and the night air, and on the following day was unwell. Next day he remained in bed, and sent for Mr. Coppin of South Great George's-Street, who found him labouring under the following symptoms: the left side of the face, and the upper lip, were swollen and painful; skin hot and dry; face flushed; tongue white; pulse 132, soft, and small; some thirst. He stated to Mr. Coppin, that previous to that gentleman's visit, he had taken ten of Morison's pills, in two separate doses.

Mr. Coppin considered the case as an ordinary example of erysipelas of the face, and prescribed a weak solution of the tartarized antimony,* with whey for drink; and at the same time, entreated him to desist from any more of the quack medicine, assuring him that its use would materially interfere with the successful management of his case.

On the next day (September 6th) the patient was found to have slept well. The lip was still much swollen, but on the rest of the face, the tumefaction was diminished; pulse 128. No nausea, (he had taken but very little of his medicine;) several wa-

* ℞ Tart. Antim. gr. i. Aq. Puræ, ʒvss. Syrup. Cort. Aurant. ʒss. m. sumat coch. amp. i. omni hora ad nauseam.

tery stools ; he complained chiefly of pain in the lip. Mr. Coppin directed six leeches to the lip, and to continue the medicine every second or third hour. He was again seen in the evening, and was apparently better, and expressed himself in a cheerful manner.

7th. He passed a restless night, and complained of nausea, which he attributed to the medicine ; he had also pain below the ensiform cartilage, increased on making a deep inspiration ; yet the epigastrium was not tender. Pulse 132 ; thirst ; the patient anxious and irritable.

Mr. Coppin ascertained that he had taken five more of the "Morison's pills," previous to his visit : he again remonstrated with him, and desired him to omit the medicine which was prescribed the day before, and to use effervescing draughts, with a pill, every second hour, consisting of a small quantity of blue pill, James's powder, and extract of hyosciamus.* On that evening the patient was worse ; he vomited his drink, and passed a watery stool : he complained much of pain, and sickness of stomach, abdomen full, and rather tense. The pills were omitted, and the saline draughts continued, though in but half the quantity.

On the morning of the 8th, Mr. Coppin was preparing to go out, when he received a message, excusing him from further attendance on Mr. ———. *On that day, the patient sent for the agent of this quack medicine, who saw him, and encouraged him to persevere in the use of the supposed specific. He was assured, that the distressing gastric symptoms, were the "proper effects of the remedy ;" that "the disease would be thus drawn downwards from his head ; and that by perserverance, he would be soon reinstated."* As a fit conclusion for this scene of iniqui-

R Pulv. Jacobi veri gr. iv. Mass pil. hydrarg. gr. x. Ex. Hyosciam. gr. vi.
 ℞ Ft. pil. viii.

ty, ten pills additional were administered to the sufferer, by the hands of the agent himself.

In the course of that day, the unfortunate patient, as it were in a state of desperation, took thirty-one of these pills, all his bad symptoms rapidly increasing.

On the following morning, Mr. Coppin again saw him, and found his breathing difficult. He complained of a great pain at the lower part of the chest ; pulse feeble and rapid ; eyes closed ; decubitus on the back : he had been violently purged the whole night. A blister was directed for the belly, and Mr. Coppin requested again, that a physician would be called in. Dr. Labatt saw the patient for the first time, early in the morning, and found him almost moribund. He was nearly insensible ; the extremities cold, and countenance collapsed ; the belly was swollen, hot, and tender. Some hours after this, he was seen by Drs. Labatt and Stokes in consultation. A degree of re-action had taken place : the patient spoke rationally, and knew all those around him. He declared that he had taken more than fifty of the pills. His extremities were cool, and the pulse feeble and rapid. The abdomen was burning hot. The femoral arteries at the groin pulsated strongly ; and pressure on the epigastrium produced exquisite pain. Thirst, but no vomiting, nor were cramps in the limbs complained of. Warmth was ordered to the extremities, ice internally, and leeches to be applied to the epigastric region, where he complained of burning pain and heat. The remedies seemed to have no effect, and this patient, the sole support of a widowed mother, and large family of sisters, died on the evening of that day.

The dissection was performed on the afternoon of the next day. Present, Dr. Labatt, Dr. Stokes, Mr. H. Labatt, Mr. Coppin, and two friends of the deceased.

Body spare, but muscular ; muscles rigid ; face pallid, and with a slight tumefaction about the mouth ; the integuments of the back externally purple ; belly swelled and tympanitic.

On opening the head, no blood flowed when the skull cap was raised, nor did the dura mater present any unusual appearance. The surface of the arachnoid was moister than natural, but no lymph appeared. The membrane was here and there slightly opaline, and somewhat thicker than usual. Some of the veins of the pia mater were full of dark coloured fluid blood. The cerebral substance seemed perfectly healthy, nor did any effusion exist at the ventricles, or at the base of the brain.

The lungs presented a few old filiform adhesions, and were œdematous at their posterior portions, but otherwise healthy. The surface of the pericardium was a livid red, and here and there, minute granules of lymph might be detected. Valves healthy.

On opening the peritoneal cavity, the serous membrane exhibited no sign of inflammation, but appeared of a dark livid hue. The stomach was remarkably contracted, and presented, over the whole of its greater extremity, the most vivid possible scarlet injection, so minute as to totally obliterate all the natural appearance of the mucous membrane. This condition terminated by a well-defined line at the centre of the organ, the remainder of which was a livid slate colour, and the consistence of the whole of the membrane was completely pulpy. The livid colour and softening of the mucous membrane continued through the whole of the small intestines. The cæcum, colon, and rectum presented a remarkable appearance. In these situations a vast quantity of serous fluid existed, of a brownish colour, and without the smallest portion of fæcal matter. The mucous membrane had totally lost the natural feel and appearance of this tissue, and to the eye and touch greatly resembled a serous membrane. Spleen large and pultaceous ; liver small and apparently healthy ; bladder thickened.

It is not our intention to offer any observations on this case, as we wish to let it go forth, and be judged of by the profession in an unbiassed manner. But we must remark, that while the public eye is incessantly presented with the unblushing

statements of the empiric, on subjects too, be it remembered, which the ordinary course of education does not enable it to judge of, too few efforts have been made by medical men to counteract the evil. If in this instance the influence of the press be found powerful to evil, it will also be found powerful to good; and while but one side of a question is presented to the public, can we wonder at the spread of empiricism in these countries. Let the regularly-educated members of the professions of medicine and surgery come forward and meet the evil, by proclaiming such of its consequences as come to their knowledge. Let them do this candidly, dispassionately, without fear, and without favour, but with the most strict adherence to truth, and they will save many an useful member of society from such a fate as the subject of our case presents: they will advance the real interests of their noble profession; and, in time, furnish a mass of evidence that, sooner or later, will lead to a more effectual protection of the public against the heartless traffickers in human life.

ART. XVII.—*Case of Malconformation extending through the Alvine, Urinary, and Genital Organs.* By PHILIP M. LYONS, M. B., A. M., Physician Accoucheur to the Brighton Lying-in Institution, and one of the Physicians to the Brighton General Dispensary.

As the subject of monsters, which is at all times interesting to the inquiring mind, has been rendered, if possible, still more so by the valuable works of Serres and Saint Hilaire, I shall make no apology for presenting to the profession the accompanying case, which will be found to embrace a considerable number of those anomalies that Saint-Hilaire has classed under different heads.

Eliza Scott, 35, New Dorset-street, Brighton, mother of nine children, all of whom were perfect, was taken ill on the

24th of August, 1832, and after twelve hours' labour, was delivered of a seven months' child. The infant, a large one for its age, breathed slightly, but was extremely livid and weak. Seeing it was not perfect in the extremities of its urinary or alvine canals, but being desirous of ascertaining to what extent life could be prolonged under such circumstances, I availed myself of every possible means to resuscitate it. It continued to breathe for nearly an hour, during which time, the fists were almost constantly closed, and the limbs spasmodically drawn up; especially, whenever any strong stimulant was had recourse to.

Permission being obtained to examine the mal-formed parts, the following appearances presented themselves: the size was that of an aged fœtus; there was the trace of a nipple on the right side, but none on the left. Below, and in front of the pubis, and occupying the place of the penis, there projected forward and downward, a thick roundish process, measuring three inches in length, and three inches and a quarter in circumference, having a solid thickened feel throughout, with the integuments very much wrinkled. The latter terminated in front, in what appeared to be a prepuce phymosed in its anterior and inferior parts, and consequently, pouting beyond the glans penis, which was of a natural form, and of about the size of half the kernel of a Spanish nut, but of a purple colour, as though it were gorged with venous blood; in its centre, it presented a dimpling cavity, so very minute, that only a small bristle could be introduced into it. To the sides of this process or penis, as it comes from the rami of the pubis, two other processes were attached; the one on the right side, three quarters of an inch in length, and the same in diameter; the other an inch and half each way; both pyriform in shape, the investing integument of each very thin, and only to be compared to that of the scrotum when distended with fluid. The penis being turned upon the abdomen, there was no trace of either scrotum or anus, and but a very slight one of the raphe. The integuments were continuous with those covering the nates

and sacrum; a slight blush of red was noticeable over a very small space in front of the coccyx. The abdomen being opened, the right lobe of the liver was found to extend as low as the corresponding ilium; the left one projected into the left lumbar region. In front of the abdomen, and stretching almost as high as the umbilicus, lay the bladder, the coats of which felt much thicker than ordinary. On raising the liver, which was of a darker colour than is usual in the foetus, and which seemed very much congested, the gall bladder was seen distended with bile. The hepatic, cystic, and common ducts were all pervious.

The stomach being opened, the form and situation of which were perfectly natural, it was found filled with a gluing kind of mucus and some spirit and water, which had been used as stimuli. The duodenum and other small intestines, whose appearance and position were natural, contained a peculiar species of gelatinous substance, not unlike dissolved muscle; these ended in the cæcum, which was placed immediately below the central fissure of the liver; thence proceeded the colon, which, having passed down into the left iliac fossa, crossed behind the bladder into the right one, and ascended as high as the last false rib, on that side, whence, inclining backwards, it bent down to the inferior fundus of the bladder, where it terminated in a firm tendinous substance which became incorporated with the coats of that viscus, at a point corresponding with the centre of the trigone. This intestine, which not having any longitudinal fibres, was consequently divested of its usual sacculated appearance, was filled with a substance similar, except in colour, to that which filled the other intestines: the hue of this matter was dark green, intermixed with yellow flakes, not unlike to yellow wax, and to part of the contents of the gall bladder.—The intestines being removed, the kidneys were discovered in their proper situation, but much broader and flatter than usual, and as though they had been beaten out; on being cut into, they were found to contain a reddish serous fluid; neither of

them had any ureter, but was connected by cellular bands with a sort of vesicular body, which lay in front of the aorta, and over which terminated in a fibrous expansion, a white, somewhat thickish tube, pervious a considerable portion of its length, and which arose from the right angle of the trigone ; this vascular substance being laid open, it appeared to consist of distinct cells, unconnected with one another, and each containing a substance similar to that in the intestines, but in a more diluted state. The bladder being divided, two openings were found in it, one in either angle of the trigone ; a bristle being passed into one of those, it proceeded into the tube or ureter, already described ; the second, instead of taking a similar course, seemed to incline forwards, towards the arch of the pubis.— Having freed the glans from the surrounding prepuce, I laid open its orifice which was lined with the epidermis, but which terminated in a fibrous cord, that extended back to the arch of the pubis, and there lost itself in cellular tissue ; on dissecting this process still deeper, I found, immediately beneath this fibrous structure, or obliterated urethra, a large cavity extending from beneath the arch of the pubis to beyond the glans, where it terminated in a cul de sac. The appearance of the lining membrane showed this at once to have been the rectum ; on examining it more minutely, I found the extremity of the bristle which had been introduced into the second opening of the trigone, and which seemed to pass into this cavity with apparent ease, as though there was a free communication between the bladder and it. The large cyst on the left side of the penis being denuded, was found to be lined with a mucous membrane, divided into cells, and filled with a matter similar to that already described, in the midst of which lay a perfect testicle, about the size of a silver fourpence, and having its epididymis complete. The cord followed its usual course as far as the ring of the external oblique ; beyond which time would not permit me to trace it. The process on the opposite side was

devoid of testicle, but in every other respect similar to the large one. On seeking for the testis belonging to this side, it was found below the kidney, apparently blighted, and of the size of a silver twopence. It is hardly necessary to observe, that had this child lived sufficiently long to allow of it, any attempt to form an artificial anus or urethra must necessarily have failed.

BIBLIOGRAPHIC NOTICES.

Histoire Generale et Particuliere des Anomalies de l'Organisation chez l'Homme et les Animaux, par M. ISIDORE GEOFFROY SAINT HILAIRE, Tom i. avec planches, pp. 739, Paris, 1832.

General and Particular History of Anomalies of Organization in Man and Animals, by M. ISIDORE GEOFFROY SAINT HILAIRE, Vol. I. with plates, Paris, 1832.

THE publication which bears the above title, dedicated to the illustrious father of the author, is the first volume of a work undertaken with the express purpose of instituting, under the name of *Teratology*, (from *Τέρας*, *monster*, and *Λόγος*, *an account*), a new science, the object of which is to embrace the consideration of all irregularities of form or structure occurring in man and animals, whether designated by the title of anomaly, monstrosity, variety, or malformation ; and to explain them according to physiological principles.

In the introduction the author divides the monstrosities, or the science of *Teratology*, into three periods or epochs.

The first period, which he calls the *fabulous*, extends to about the middle of the 17th century. In this period, which commenced with the history of the human race, monstrosities were regarded as manifestations of the Divine wrath, or presages of some public calamity ; and some of them were supposed to be produced by the influence of an evil spirit. The cruel laws of ancient Greece and Rome, condemning monsters to death, most probably were influenced by such feelings, which had not completely subsided in Europe even in the 17th century ; for we find it laid down in a work published by Riolan in Paris in 1605, that monsters resembling the devil, *if allowed to live*, should be kept closely confined in a chamber, while those half man and half some other animal should be put to death.

The second or positive period of the history of monstrosities, comprises about the first half of the 18th century, when owing

chiefly to the labours of the learned Academicians, Mèry, Duverney, Winslow, Lémery, and Littre, the characteristics of monsters were more carefully studied and more clearly pointed out, and a discussion arose on the question, whether monstrosity was an original or an acquired condition.

The third or scientific period was commenced by the illustrious Haller, who, submitting to a strict and careful examination the facts advanced by his predecessors, compared them with his own observations, and distinguished those which were attested by the concurring testimony of numerous observers, and which accorded with his own experience, from those which appeared fabulous, and not sufficiently well authenticated. The conclusions which he drew from the consideration of the former, invested the study of this subject with a new degree of interest in a physiological point of view.

“The work of Haller (*de monstribus*) having established a confidence in the facts relating to monstrosities which they did not before possess, the importance of their study to the progress of physiology was no longer doubted, and numerous applications of them were made to that science. The absence of brain and spinal cord in the anencephali, who, notwithstanding could live for some hours after birth, that of the entire head, of the heart, and of a great number of the viscera in the acephali, imperforation of the mouth, interruption of the œsophagus, are facts frequently adduced by ancient physiologists in support of their theories. Whatever were the conclusions they drew from the above facts, they never suspected the richness of the mine which they opened, they never perceived in the phenomena of monstrosity experiments given to us by nature ready made and freed from those numerous causes of error, which, in ordinary cases, complicate and obscure the results.”—p. 13.

It is only within a period comparatively of recent date that the laborious investigations of Meckel, Treviranus, Tiedemann, Geoffroy St. Hilaire, Blainville, Serres, and other distinguished German and French anatomists, by comparing the adult man with the embryo, and other animals with both, have ascertained some of the true laws of organic formation, and applied them with such happy effect to the explanation of monstrosities.

“Philosophical anatomy, by the theory of unity of composition, had shewn animals to be composed of materials always similar and always disposed according to the same laws; it pointed out between beings on the most distant degrees of the scale, curious and unforeseen relations; in fact, it taught us to perceive in all animals of the same branch only the self same animal, and to distinguish, amidst the infinity of differences of sex, age, and species, one common fundamental condition, from which nature, faithful to unity, never departs.”—pp. 16, 17.

“ The possibility of referring monsters to a common type was an easy deduction, an indispensable corollary of the theory of unity of organic composition. When it was perceived that entire classes of the animal kingdom were established on a single type, it became difficult and almost absurd to admit the existence of many types in the same species. However, it was not sufficient to establish theoretically so important a fact; and, besides, the doctrine of *unity of composition*, far from furnishing the basis of other theories, itself demanded new proofs at this period. Philosophical anatomy alone could then settle the question. A solution was demanded of embryogeny, and it replied by the *theory of arrest or suspension*, and retardation of development.”—p. 17.

The theory of arrest of development, it is obvious, only explains the occurrence of monstrosities in which a defective formation is observable. Monstrosities, characterized by an excess of development, are explained by referring to another law of embryogeny, the *theory of eccentric development*, which shews that when an organ is double, the artery nourishing it is double also, and that the absence of a part indicates the absence of its artery.

Our limits confine us to a cursory notice of some other interesting particulars respecting double monstrosities, the most remarkable of which is, that the two individuals constituting a double monster are always united by homologous surfaces, as back to back, side to side, &c., and that each part and organ of one exactly corresponds to a similar part or organ of the other. Every vessel, nerve, or muscle of one individual, placed on the line of junction, is, to a corresponding vessel, nerve, or muscle of the other individual, as one-half of a symmetrical part of a normal being is to the other.

We thus perceive that double monsters are the result of an extension of the *law of fusion of parts*, which is exemplified in the mode of development of all organs placed on the median line, as, for instance, the bodies of the vertebræ, the pieces of the sternum and os frontis, which originally formed of two halves, at first distinct, are afterwards fused and united together.

The first chapter treats of the definition of anomalies and their classification.

“ All species, especially man and the domestic animals like him exposed to the influence of different climates and to the action of a number of modifying causes, are subject to a multitude of variations in the form and proportional size of their organs. The same individual, observed at two different ages, or in two different seasons, often presents numerous and remarkable differences. There exists, however, in the midst of these diversities, an assemblage of characters

common to the majority of individuals which compose a species, and it is this assemblage of common characters which constitutes the *specific type*.

“Every deviation from the specific type, or in other words, every organic peculiarity which an individual presents, compared with the great majority of individuals of its species, age, and sex, constitutes what is called an *anomaly*.”—pp. 29, 30.

The terms *anomaly* and *monstrosity* have often been employed as synonymous. If this view were adopted, every alteration from the specific type, from the irregular branching of an artery or nerve, to the impermeability, change of form, structure, number, and connexions of an organ, should be considered a monstrosity.

The author employs, very judiciously, the term *anomaly* in a general sense, comprehending all irregularities, and including four principal groups or divisions.

1st. *HEMITERIES*, (from ἡμι, *half*, and τέρας, *monster*,) which include *varieties*, as the presence of a supernumerary muscle or double renal artery, and *malformations*, as hare-lip, hypospadias, or congenital phymosis. Anomalies of this class do not prevent the exercise of the functions of the parts.

2nd. *HETEROTAXIES*, (from ἕτερος, *other*, and ταξις, *order*.) anomalous arrangements of organs which do not interfere with their functions, and are not indicated by any external deformity, as transposition of the viscera.

3rd. *HERMAPHRODISMS*.

4th. *MONSTROSITIES* proper, the most serious of the anomalies affecting internal organs, so as to interfere with their functions, and indicated by certain external appearances, which are signs of the internal derangement. Thus the absence of the head, as remarked in a foregoing quotation, indicates the absence of the heart, and many other viscera.

We will not follow the author through the interesting discussion into which he enters, to prove that monstrosities, with all their apparent irregularity, and amidst all their varieties, present a certain determinate series of characters or conditions, by which they can be classed with as much regularity as any normal order of animals.

We proceed to notice anomalies in the order in which the author treats them, commencing with *HEMITERIES*, which are divided into five classes, viz., 1. *anomalies of volume*; 2. *anomalies of form*; 3. *anomalies of structure*; 4. *anomalies of disposition*; 5. *anomalies of number and existence*.

The first book is devoted to the consideration of anomalies of volume, which the author classes under the four following heads:

- I. Anomalies consisting of a general diminution.
- II. Anomalies consisting of a general augmentation.
- III. Anomalies consisting of a partial diminution.
- IV. Anomalies consisting of a partial augmentation.

An anomaly falling under any of the above heads may be *temporary*, or found to exist only during foetal life or infancy, or *permanent* when it continues up to the adult period.

He illustrates anomalies of general diminution, by a chapter on dwarfs, restricting the application of that term to individuals whose size is considerably below the medium size of their race, and who present diminished dimensions of all their parts. Persons below the average size, in consequence of having short or imperfect lower limbs, while the trunk is of the ordinary dimensions, and persons of short stature, in consequence of deformity produced by rickets, are consequently excluded by this definition from coming under the denomination of dwarfs proper.

Passing over the fabulous stories of the pigmies, for a full account of which we would refer to Tyson, whose treatise on this subject our author does not notice. Dwarfs appear to have, at remoter periods, been objects of great attraction, and much sought after by princes in less enlightened times, who made their infirmities subjects of amusement. This barbarous propensity was indulged in, not only by some of the most tyrannical and depraved of the Roman emperors, but was even common among European princes in times less remote. In the 18th century we find Catherine de Medicis and a certain Electress of Brandenburg, amusing themselves by promoting marriages between dwarfs, which were always unproductive of offspring.

The particular history of some dwarfs has been better authenticated, especially those of Jeffrey Hudson, Bormilarki, and Nicholas Ferry, otherwise called Bebe, who was the most celebrated person of this description.

Jeffrey Hudson was born in 1619, at Oakham, in Rutlandshire. At the age of eight years he was presented in a pie by the Duchess of Buckingham, to Henriette Mariè of France, the Queen of Charles I. He was then only 18 inches high, and for many years was remarkable for the smallness of his stature; but at the age of thirty he grew rapidly to the height of 3 feet 9 inches. Having been the subject of much curiosity and mirth, he died in prison in 1682, after the restoration, being accused of a political crime. He was inferior, neither in courage nor intellect, to the depraved courtiers of that degenerate period.

There was less incident in the life of Bebe than in that of

Hudson, but in a scientific point of view, his history is more interesting. His parents were of good size and well made, and had several other children; he was born in 1741, in Vosges; he came to the world after a pregnancy of seven months; at birth he was between seven and eight inches long, and weighed a pound; the labour of his mother continued 48 hours; he was presented at church, for baptism, on a plate, and his first cradle was his mother's shoe; his mouth was too small for his mother's nipple, and he was suckled by a goat. He began to speak at 18 months, but did not walk until the second year. At five years old he was carefully examined by the physician of the Duchess of Lorraine; he weighed at that time nine pounds eleven ounces, and was twenty-two inches high, but he possessed all the several attributes of a young man of twenty. At this period he was brought to the court of Stanislaus, ex-King of Poland, Duke of Lorraine, who paid him every attention, and to whom Bebe became very much attached. His intellect was always weak, he could not be taught to read, nor to appreciate religious instruction, and did not recognize his mother after an absence of fifteen years. He was vivacious in his movements, very irascible and jealous of greater attention being shewn to any other person; he had an ear for music, and was a proficient in dancing.

At 15, the period of his puberty, his health began to decline rapidly, and he died at 22, having all the appearance of old age.

His skeleton, which we have seen in the Museum of Natural History at Paris, is remarkable for the great prominence of the forehead, and a marked distortion of the vertebral column in the dorsal and lumbar regions. The bones are almost all completely ossified; the sagittal suture is obliterated; the parietal bones are thin and reticulated on their external surface like those of some of the Cheilonian reptiles. The skull is much depressed between the parietal and occipital protuberances, the nose prominent, the nasal bones broad at their lower extremities, and the great toe unusually long. The whole height of the skeleton is 2 feet, 9 inches, 6 lines.

Borwilaski, who was a cotemporary of Bebe, was a Polish gentleman, learned and intellectual, who wrote his own life; at the age of 22 his height was 28 inches; he was in good health. He came to the world at the ordinary time. His parents were above the middle size. He had four brothers, of whom the eldest was of small stature, being only 34 inches high, and the other three exceeded 5 feet 6 inches. He had a sister who, at six years old, was only 20 inches high. It is remarkable, that Borwilaski, his sister, and eldest brother, were deformed at birth, but became well proportioned afterwards.

The preceding observations shew that there are many varieties in the physical and moral endowments of dwarfs. Some pass from infancy to old age and infirmity in a quarter of a century; others enjoy good health to an advanced age. Some, like Bebe, are almost idiots, while others, like Borwilaski, possess more than an ordinary share of intellectual powers. There are, however, several organic conditions which are general or common to a great number of dwarfs, which deserve to be particularly attended to.

1. Dwarfs are in general irascible, and when in good health are of a lively and active disposition. It is a well known fact that men of small stature are more irascible and active than men of large stature. We have been informed by military friends, that during the Spanish campaign, the battalion and light infantry men of the British army, were less fatigued after a severe day's duty than the grenadiers. We all know the restless activity of children, and it may be taken as a general rule, that the smaller animals are more vivacious and active than the larger. This has been often referred to the circumstance of the blood returning more readily to the heart in small animals in consequence of the circle of its circulation being more circumscribed; but the influence of the nervous system in this case is very considerable.

2. Dwarfs have generally short legs and a large head, with a sour, disagreeable expression of countenance. They are mostly rickety either in infancy or at the period of puberty.

3. Dwarfs are generally incapable of propagation with individuals of ordinary size, and even with each other, as the experiments tried by Catherine de Medicis and the Electress of Brandenburg, already mentioned, would go to prove. It is perhaps wisely so ordained by providence, as a means of preventing the increase of a feeble and degenerate race of mankind. Indulgence in venery enervates dwarfs, and often proves fatal to them. It is to this cause that the premature old age and death of Bebe were attributed.

Dwarfs generally come to the world after the ordinary term of gestation. They are seldom twins. Their mothers have been generally well proportioned, often above the ordinary size, and remarkable for fecundity; in many instances the same mother has given birth to two or more dwarfs, as in the family of Borwilaski.

Dwarfs are not more rare among races of mankind of large than those of small stature, nor are they more frequently of one sex than the other. They are commonly very small at birth, as Bebe; sometimes, however, they are of the ordinary size when born, but seem to have their growth checked after birth. The

growth of many animals appears often arrested, particularly when deprived of the nourishment derived from the milk of their mother, or when otherwise stunted in their food.

The author, after noticing the absurd theory of the ancients, who considered that the cause to which dwarfism is owing, was a deficiency in the quantity or quality of the seminal fluid, assigns as the more probable cause of this condition some impediment to the nutrition and development of the fœtus, arising from a defective conformation of the uterus of the mother, or to a disease attacking the young individual itself during its fœtal state. The circumstance that dwarfs frequently exhibit symptoms of rickets, and that they have never been observed in any of the lower animals except in a state of domestication, in which their nature is considerably modified, are strong arguments in favour of the condition of dwarfism depending on one or both the above causes.

The second chapter treats of anomalies of general augmentation of volume, in which is included the history of giants, and a discussion on the conditions which distinguish them from persons of ordinary size.

A vague opinion was at one time entertained in Europe, and still prevails among many races, that the men of ancient times were of larger stature than the present descendants: "The Academician Henrion, a zealous supporter of this opinion, formed, in 1718, a table or chronological scale of the variations of the human stature from the Creation to the Christian æra. According to him Adam was 123 feet 9 inches high, and Eve 118 feet 9 inches and 9 lines, Noah was 20 feet lower than Adam, Abraham between 27 and 28 feet, Moses 13 feet, Hercules 10, Alexander 6, and Julius Cæsar 5: the human race, progressively diminishing, were it not for the interposition of Providence, would have dwindled to the size of microscopic beings by the present time." These reveries of the learned Henrion were founded on the tradition of the Rabbins, according to which Adam was at first 900 cubits high; but that after he had sinned, God caused a considerable diminution of his size.

The mention made of giants in the book of Genesis was considered as a proof of the existence of a larger race of men in former times; but the Hebrew word translated giant, also signifies barbarous men, wicked or cruel men, moreover the text, "and there were giants in those days," taken literally, in no wise warrants the conclusion, that the whole race of men, or any particular nation or tribe, was of gigantic stature.

The allusions to the giants of old which occur in profane history, may be regarded as merely poetical.

In the middle ages large bones were discovered in various parts of Italy and France, and it is not extraordinary, considering the then imperfect state of anatomy, and the general resemblance which exists between some of the bones of elephants and human bones, that they should be taken for the bones of giants.

A large skeleton, found at Trapani, in Sicily, in the 14th century, was at once supposed to be the remains of Polyphemus, and it was calculated that his height must have been at least 300 feet, a moderate size, perhaps, for a Cyclop. The remains of other giants were afterwards found in various places. Antæus was found at Tingis; Orion had been found in Crete, &c. The bones of the mastodon, when first found on the banks of the Hudson, were supposed to be undeniable proofs of the existence of a race of giants in remote times.

Riolan, and other anatomists of the 17th century, refuted the absurd opinion, that these bones belonged to human beings; and it is superfluous to notice here, the result of the able researches of that prince of anatomists, Cuvier, by which the bones of these pretended giants were proved to have been the property of elephants, mastodons, rhinoceros, whales, and large reptiles.

According to Meckel, the size of giants never exceeds eight feet. Our author doubts the correctness of statements regarding giants, whose height has been said to exceed eight feet and a half.

The general remarks on giants are less interesting than those on dwarfs, which they resemble in some particulars, as in having, generally, a weak intellect, a defective power of reproduction, and being short lived. They are not so vivacious nor irascible as dwarfs, but, on the contrary, are mostly dull and stupid. They are of lymphatic temperament, and fair complexion, with, generally, a smooth, soft skin. They are generally the children of women remarkable for fecundity, and occur in tall families.

The causes which produce growth to a gigantic size, are not clearly known; Haller supposes it may arise from abundance of food, a flexibility of organization, and slow circulation. A gigantic stature is of still rarer occurrence among animals than men.

(To be continued.)

Observations on Obstetric Auscultation, with an Analysis of the Evidences of Pregnancy, and an Inquiry into the Proofs of the Life and Death of the Fœtus in Utero. By EVORY KENNEDY, M. D., Licentiate of the King and Queen's College of Physicians in Ireland, Lecturer on Midwifery and the Diseases of Women and Children, at the Richmond Hospital School, and late Assistant to the Dublin Lying-in Hospital. *With an Appendix, containing Legal Notes, by* JOHN SMITH, Esq., Barrister at Law.

THE existence or absence of pregnancy is, as the Author observes, often a question the most important that can come under the decision of a physician; involving, in regard to himself, credit and professional estimation, and in respect to his patient, property, life, or considerations of still higher value, fair fame and honour. The profession stands in need of such a work as the present, for the evidences of pregnancy are of too much importance to be trussed up within the boundaries of a single chapter, or skimmed over as an unimportant part in a systematic work on midwifery. As our knowledge widens, subjects that formerly could have been treated of within a very limited space, spread into a magnitude and importance that exact for them, and properly, a corresponding sphere of attention; and of such subjects, not one more deservedly claims a full share than that now before us. On the one hand it extends into practical medicine, involving the treatment of all the varied diseases that are dependent on, or accidentally occur in the female constitution: and, on the other hand, it forms a connecting link between medicine and law, constituting one of the most intensely interesting parts of medical jurisprudence; whether the question in a court of law be, of property to be reserved for a child yet unborn, or pregnancy be put in as a plea by the guilty and convicted mother, to stay her own execution. The medico-legal bearings of the question naturally turn us to the consideration of the laws of these countries, with regard to pregnancy put forward in stay of execution, and if Dr. Kennedy, and his colleague in this part of the work, Mr. Smith, who, as far as we can judge of such matters, has evinced great research, correct reasoning, and certainly a humane and benevolent mind, had done nothing more than point out the barbarous and ignorant enactments of our laws, or, perhaps, as the analysis will show, the ignorance of our law expounders, they have earned our warmest commendation. In

the exercise, as reviewers, of our high power of cutting up books as we please, we will commence our analysis with the medico-legal part of the work. When a woman is convicted of a crime for which the penalty is death, it is believed that common law and statute law declare that if she be *quick* with child, she shall not suffer death until after delivery, in compliance with the maxim, of which the truth is felt in every man's bosom, that the innocent should not suffer for the guilty, and therefore, that the guiltless unborn shall not suffer death for its guilty parent. Sir William Blackstone says, "If they (the jury of matrons) bring in their verdict, *quick* with child, (for barely with child, unless it be alive in the womb, is not sufficient,) execution shall be staid generally till the next session." The words of Lord Coke are: "If it be found, by an inquest of matrons, that she is *quick* with child, it shall arrest and respite execution till she be delivered." These two authorities agree in their exposition of the law, and that exposition is, in the present day, acted upon in courts, and is acted upon in its popular and apparently obvious meaning, that if the woman have not *quickened* with child, that is, if she have not felt the motion of the child within her womb, or if she have not arrived at that period of pregnancy, viz., about the sixteenth week, when the motion is usually felt, she shall be executed, notwithstanding evident and undeniable pregnancy. There can hardly be any enactment more monstrous, or revolting to the feelings than this, when we know that the unborn child of four months old, which is thus legally murdered in its mother's womb, is just as much alive as it would be, if permitted to live up to the moment of its leaving that womb, and taking on an independent existence. Yet such is the practical law among our proud legislators, who boast of their information and of their humanity. And if any thing could increase our contempt and loathing for the ignorance and barbarity of such a sentence, it is the information now given, we believe for the first time, that in respect to the question before us, our ancestors were humane and rational, and, through culpable negligence or ignorance, our later law commentators and transcribers have perverted the law regarding pregnancy into its present tissue of absurdity and cruelty. Sir Matthew Hale, who wrote very shortly after Lord Coke, gives the old plea correctly: "This plea of pregnancy *in retardationem executionis* hath these incidents to it: 1. she must be with child of a *quick* child," &c., so that from the apparently unimportant misplacing of the single word *quick*, has arisen the evil of which we are complaining. Sir Wm. Blackstone and Lord Coke apply *quick* to the mother, "she must be *quick*

with child," which, in laying down the law at present, is taken in the meaning of the popular phrase, she must have quickened, or have arrived at the period of quickening, that is, at the sixteenth week of her pregnancy, before her pregnancy can be pleaded as a bar to execution. The law, however, as laid down by Sir M. Hale, "with child of a *quick* child" means, that the woman shall have in her womb a *quick* or *living* child, and only asks this question, "is the child alive?" without reference to its age, whether of one month or eight months. In this view, the law is both humane and rational, and Mr. Smith proceeds to state he is confirmed in these views from having examined all the authorities referred to by Lord Coke and Sir M. Hale, and having been unable to find even one, in support of Lord Coke's opinion; but, on the contrary, that in some of the instances referred to by Lord Coke, the issue was merely, "enseint, ou nient;" and that in another instance, probably the very one on which Lord Coke founded his opinion, the terms are, "si el fuit enseint de *vive* enfant ou nient." The transference of the word *quick* from child to mother was easily made, and thus a slight transposition of words has produced a great and evil change in practice. In France, in the year 1666, the greatest disgust and horror were excited by the execution of a woman, who, on examination after death was found to have been pregnant. A law has since been passed in France that no woman shall be executed until it shall have been first satisfactorily ascertained that she is *not* pregnant.

The law in these countries still continues to be a mixture of cruelty and absurdity; for, if a woman sentenced to death plead pregnancy as a bar to execution, her plea is to be tried, not by medical men, but by a jury of matrons; and we may imagine the talent and honesty of such a jury, collected from the precincts of a crowded criminal court. A jury of matrons was summoned on a trial in Carlow, in the year 1830. The particulars are given by Dr. Kennedy, as related to him by John Martley, Esq., K. C., and in a letter from Dr. Porter, of Carlow, who, describing the jury, says, "so absurd and ludicrous a group as the jury of matrons I never witnessed; brought together to decide upon so intricate a subject, a subject which not one of them knew one particle about, what else could be expected? Some of them were *unmarried*, and not one of them ever attended a lying-in case during her life. In fact it was one scene of confusion." We shall give a case at length, which is an example of the evil already described as resulting from applying the epithet *quick*, indifferently, to the mother and the child; and also shows forth strongly the worse than

folly of trusting to a jury of matrons in so important and so difficult an instance.

“The case was one in which a woman, named Mary Wright, was indicted before Baron Bolland, at the Norwich assizes, March 3rd, 1833, for poisoning her husband. She was clearly found guilty of the crime, although an unavailing effort to prove her insane at the time of committing it, was attempted. The prisoner’s counsel put in a plea of pregnancy in bar of execution, which the judge directed the sheriff to summon a jury of matrons to investigate. Twelve married women were found; and after being sworn, were directed to try whether the prisoner was pregnant with a *quick* child. After an hour’s investigation, they returned a verdict that she was *not quick with child*. The woman was, of course, ordered for execution on the Monday following. Under these circumstances, Surgeons Scott, Crosse, and Johnson, fully alive to the absurd, although legal method, adopted to ascertain an extremely difficult point of diagnosis, and one involving the life of an individual in its accuracy, voluntarily waited upon the convict in the jail on the morning following, and having, to use the words of my friend Mr. Scott, the eminent partner of the late celebrated Dr. Rigby, “completely *stultified the verdict* of the twelve discreet matrons,” and satisfied themselves that she was not only pregnant, but quick with child, they forwarded immediately to the judge of Assize the following document, duly attested, and with their respective signatures appended.

“ ‘NORWICH COUNTY JAIL,

“ ‘Saturday, quarter before 9, A.M., Mar. 23, 1833.

“ ‘To the Hon. Sir William Bolland, Knt., Baron of the Exchequer, the following representation respectfully sheweth:

“ ‘That we, the undersigned, are surgeons and accoucheurs of considerable experience in the practice of midwifery, and have repeatedly examined females in different stages of pregnancy.

“ ‘That we have this morning strictly examined Mary Wright, a prisoner, *sentenced to be executed* on Monday next, for the murder of her husband, and found her between five and six months gone in pregnancy.

“ ‘That in an apparently vigorous and healthy woman like the prisoner, and where the size of the body has regularly increased during pregnancy, we should feel ourselves bound to believe the *fœtus* living, unless we found some signs of its being dead.

“ ‘That in the prisoner, Mary Wright, we find no signs of a dead *fœtus*; but on the contrary, have positive evidence of its being at this time living.

“ ‘That we do verily believe the said prisoner is above five months advanced in pregnancy, and carries in utero a living *fœtus*.

“ ‘That in a case of such a nature, we desire, without delay, to submit our statement to your lordship; and if the verdict of the jury

of matrons, yesterday given, that the prisoner, Mary Wright, was *not quick with child*, deprive the said prisoner of a reprieve until delivery *ex necessitate legis*, we humbly entreat your lordship to respite the execution of the said Mary Wright until she be delivered.'

"Of course Baron Bolland paid the attention to this document it merited, and the woman was reprieved until after her delivery.

"The following letter, transmitted to us within the last few days, renders unnecessary any further comment upon our part, either with a view to point out the imperfection of the law in its present form, or to eulogize the conduct of those individuals, who, in so prompt and effectual a manner, turned their practical information to the most gratifying account, that of preserving a life on the point of being sacrificed to ignorance and misrule.

" 'Norwich, 17th July, 1833.

" 'SIR,

" 'Wishing to give you a brief and authentic document respecting Mary Wright, in whose case you have taken an interest, we beg to offer you the following account, in addition to the petition and certificate presented by us to the judge of Assize, and published in the number of the Medical Gazette for the 6th of April last.

" 'The positive evidence we gained of a living foetus being in utero, was obtained by our feeling, by means of the hand applied upon the abdomen, the distinct movements of the child against the walls of the uterus; and, having gained this evidence, we did not persevere in the use of the stethoscope for a more minute investigation.

" 'We expressed our opinion, that the said prisoner was *between* five and six months gone in pregnancy, and we positively stated in the printed petition and certificate before alluded to, our conviction that she was *above* five months advanced in that condition. The result has verified most exactly our statement.

" 'After a tedious and lingering labour, during which each of us was in attendance, the said Mary Wright was safely delivered of a large, healthy, living female child, on Thursday last, the 11th instant, and is now going on uninterruptedly towards recovery, awaiting her fatal sentence.

" 'Signed, PAGE NICOL SCOTT, Surgeon to the County Jail.

" 'JOHN GREEN CROSSE, Surgeon to the Norfolk and Norwich Hospital.

" 'J. GODWIN JOHNSON, Asst. Surgeon to the Norfolk and Norwich Hospital.

" 'To Dr. Every Kennedy,
2, Rutland Square, Dublin.'

We have devoted more perhaps than due proportion to

medico-legal points, and have, nevertheless, left much unnoticed, for which the work itself must be consulted. We trust that exposing the absurdity, and as we believe with Mr. Smith, the error of the law as at present acted on, will have the effect of producing such an amendment in its phrasology as will at least prevent any mistake in the reading of a law on which a question of life or death depends. We can only aid our authors in their endeavours to attain this desirable object, by giving all the publicity in our power to their efforts. We must now proceed to those portions of the work immediately connected with medicine. In considering the evidence, or symptoms of pregnancy, Dr. Kennedy adopts the division of the French authors into simple pregnancy, or that in which there is but one foetus—compound when there are more than one, and complicated when with pregnancy there is some disease superadded, rendering the diagnosis more difficult. Pseudo-pregnancy, or the simulation of the disease by symptoms resembling those of pregnancy, commands an additional head. There is a division of the symptoms into those which are described by the patient, and those which are discovered by the practitioner, independent of any assistance from the patient, and this is a division which is useful in the consideration of every disease. On the first class of symptoms, or those which are derived from the patient herself, we shall not dwell, for two reasons—there is nothing new to be given under this head, and they are peculiarly deceptive and uncertain in the very cases in which we most need them, for we meet few doubtful cases but the patient's feelings are concerned either in a desire for offspring, and then her imagination leads her into a wish to deceive herself and others, or, on the other hand, her interest is powerfully concerned in concealing her state, and then she obstinately denies the presence of any of the convicting symptoms. We may, however, notice a correction, and a proper one, of an assertion made by Denman, that a woman never menstruates while pregnant, and that hence it is to be inferred with certainty, that if the menstrual discharge continue the woman cannot be pregnant. Perhaps Dr. Denman may be right in saying that a pregnant woman never menstruates, that is, never has a secretion of sanguinolent fluid from the inner surface of the uterus, such as occurs at periodical intervals in the healthy virgin from puberty to a certain age. On this we make no contest—we are not discussing here a physiological point; the real question before us is, whether there is ever poured forth, at regular intervals, from any part of the genital organs of a pregnant woman, a sanguinolent discharge so closely resembling the

menstrual fluid that the female herself is unable to distinguish it from the true menses. If this question be decided in the affirmative, then the presence of the menses ceases to be a sign of any value to prove the non-existence of pregnancy, and the absence of the menses occurs too frequently, independently of pregnancy, to possess any value as a sign of this state. Doctor Kennedy is, clear and conclusive on this point, and we can support him with our own testimony, for we have a case at present under our observation, where the female, the mother of four children, has menstruated, or, what is the same, as far as regards menstruation as an evidence of pregnancy, has had a sanguinolent discharge every three or four weeks from the vagina, continuing at each appearance for three or four days, and so similar to the menses that the female herself has been unaware of her pregnancy until the fourth or fifth month.

“ We have no want of testimony tending to prove that a discharge, reputed menstuous, does continue in pregnancy. Heberden and other authors have given such cases ; and Deventer even mentions a case in which the female never menstruated unless during the period of utero-gestation. I have myself met with individuals who, if their own statements be credited, were similarly circumstanced. Dr. Blundel is very decided on this subject, as regards the early months of pregnancy. He states, in his lecture on menstruation, ‘ that we must not conclude that a woman is not pregnant merely because she menstruates ; for, although doubts may be raised respecting the continuance of the catamenia during the whole term of gestation, yet I have repeatedly met with cases of pregnancy, in which the catamenia have continued to flow during the first two or three months ; indeed this, notwithstanding Dr. Denman’s assertion to the contrary, may, I think, be looked upon as by no means very uncommon.’

“ I shall take the liberty of quoting a case which is to be found in Chamberlen’s edition of Mauriceau, as it bears very strongly upon this point, and that without curtailing his pithy comments upon it : ‘ If there be any occasion where physicians or surgeons ought to be more prudent, and to make more reflections upon their *prognostics* of an affair so important as this is, it is in this which concerns their judgments as to conceptions and women being with child, to avoid the great accidents and misfortunes which they cause who are too precipitate in it without a certain knowledge. The faults committed through too much fear, at such a time, are in some measure excusable and to be pardoned, but not those caused by temerity, which are incomparably greater. There are but too many poor women who have been caused to miscarry by medicines and bleeding, not believing they were with child, which are so many murders they are guilty of who caused it, either through ignorance or rashness ; besides the deaths which they bring to those little innocent creatures, by destroying them in their mother’s belly, they often thereby put the

mothers into great danger. We have lately had in Paris, (in the year 1666,) a miserable example of this kind in a woman hanged, and afterwards publicly dissected near the Kitchen Court of the Louvre, who was four-months gone with child, notwithstanding the report of such persons as visited her, by the judge's order, before her execution, who affirmed, contrary to the truth, that she was not with child. They were deceived because the woman had her *monthly courses*.' 'Whereupon,' he adds, 'it is not fit to be too confident, forasmuch as there are many with child who *have their courses*; and I have known some who have had them all the time of their great belly till the fifth or sixth month, which happens according to the woman's being more or less sanguine, though the greatest number usually have them not; but there are few general rules which may not be sometimes excepted against.' Dr. Davis, in his evidence on the Gardiner peerage case, also gives the particulars of an interesting case, clearly proving the occurrence of a vaginal discharge in pregnancy.

"Thus, then, there can be no question that a discharge, reputed menstruous, does occur during pregnancy; nor does it merely rest, to prove this, upon the opinions of the authors already quoted, as many others could be referred to equally conclusive; and, in fact, every man engaged in midwifery practice must have met with such. Is this discharge which occurs in pregnancy, strictly speaking, a menstruous discharge? I think not; and yet how are we to distinguish? The fact is, that in certain females, in whom there is great local determination, particularly if this be attended with general fulness of the vascular system, the orifices of the secreting vessels at the upper part of the vagina and neck of the uterus yield and allow of the escape of a red fluid, exhibiting, however, more of the character of blood than of the secretion which naturally takes place from the walls of the uterus. In some cases, an actual hemorrhagic discharge occurs from these vessels, or from the vessels within the neck of the uterus; and singularly enough, this discharge will recur again and again periodically, although not with the regularity observed by the true menstrual discharge. In other cases, a partial separation of the ovum will take place, and the discharge of blood, which ought to indicate threatened abortion, will be pronounced menstruous. Again, females have been known, when anxious to conceal their pregnancy, to have recourse to the ingenious expedient of staining their linen with blood, for the purpose of deception, a case of which kind occurred to myself about a year since, on the part of an unfortunate girl, who by this means so completely deceived her mother, that my repeated assurances had no effect in persuading her that her daughter was pregnant, until she had ocular proof of the fact by the birth of a boy, when the girl confessed the deception she had practised.

"To obviate the difficulties attending these possible sources of deception, it has been proposed to ascertain by its sensible qualities whether the fluid discharged be menstruous; and with this view the

fact of true menstuous fluid not coagulating as blood does, has been much insisted on by some. Dr. Lavagna, of Milan, ascertained that it differed principally from blood in containing little or no fibrine. I knew of one accoucheur, of great professional eminence, who placed so much dependence on his knowledge of its sensible qualities, that he was in the habit of having towels sent to him from considerable distances, in order to distinguish from the stain the nature of the fluid. That certain individuals possessed of nice powers of discrimination may, by great practice, arrive at some degree of accuracy in distinguishing in matters of this kind, there can be no doubt; but that even with them sufficiently accurate data could be in this way adduced to enable them to pronounce on the existence or absence of pregnancy, cannot be admitted, much less that it could be generally available as a means of judging in these cases. How often, for instance, do we find, in cases of profuse menstruation, that the discharge will eventually become hemorrhagic? What, then, becomes of the marks which characterize the menses? Again, how difficult is it to obtain a sufficient quantity of the fluid discharged to submit it to an examination? and how can we be sure in what manner, and from whom it was obtained?"

Having passed, in review, through all the symptoms of the first class, Dr. Kennedy comes to the conclusion that not one of them, morning sickness, sympathetic pains, straying, suppression of menses, longings, quickenings, &c., is to be relied on, and more particularly because arrived at through the statement of the female supposed pregnant, to whose assertions, it appears, little credence is to be given; and the sex would indeed look in vain for a character for veracity among writers on midwifery, who seem, from their general tone, (and we are sure unjustifiably,) to be of the opinion of one of our present fashionable aphoristic writers, that "woman's life is dissembling from the cradle to the grave."

The second class of symptoms or evidences of pregnancy is, with a little of French pomposity, divided into the tangible, the visible, and the audible. An *audible* symptom would have sounded very odd a few years back, and we cannot say our ears are yet reconciled to it.

Under the first head there is a curious case, showing that the presence of the hymen is no proof of a female not being pregnant.

"A remarkable case of this kind occurred to me in March, 1830. A very respectable man, servant in Mr. B.'s family, waited upon me in company with his niece, an interesting and innocent looking girl of about twenty-two years of age. He stated that his mistress was anxious to take her as her waiting-maid, but, as an apothecary, who had lately prescribed for the girl in a bad state of health, pronounced

her pregnant, he brought her to me to ascertain the fact, or rather to disprove it, for of her innocence he seemed perfectly satisfied. On questioning the girl, at first, in her apparent innocence, she seemed quite amused with the imputation, asking me, with the greatest *naïveté*, whether she could have become so in her sleep; on persisting in my inquiries, however, she denied in a solemn manner the most remote possibility of such being the case, and with such seeming absence of guile, as caused me to doubt whether her character had not been unjustly called in question. This idea was heightened when I could discover no abdominal enlargement, or sensible change in her breasts, and on her denying her having had any sickness of stomach; she admitted that her menses had not appeared for three months. What struck me, however, as very curious, was, on my proposing a vaginal examination, in place of its being objected to, as it almost always is, and that with extreme obstinacy, by delicate-minded females, and particularly by such as are unmarried, she acceded to it with alacrity, and appeared almost to seek it; the reason of this soon became obvious enough, as on my endeavouring to insinuate the finger within the vagina, it was completely stopped by the most perfect hymen that ever came under my observation, and every attempt to proceed with the examination, and get the finger up to the uterus, was attended with such distress and irritation as to oblige me to desist. Auscultation was now had recourse to, and the fetal heart's action and placental souffle (evidences of pregnancy of which we shall treat hereafter) were detected. On my informing her that I had quite satisfied myself of her being pregnant, she still persisted in her denial, and laid great stress on the circumstance of her parts being perfect and uninjured. I now perceived the drift of her conduct in submitting so willingly to the examination, and that the girl herself, from this circumstance, was confident that she could not be pregnant. However, she was soon undeceived in this respect, and at length confessed that a married man had once had connexion with her, but that he had taken precautions to avoid injuring her, and assured her, whilst she remained perfect in this respect, she could not become pregnant, a fact which she implicitly believed. In this they were both deceived, as she was delivered in the Lying-in Hospital on the 24th of August, 1831, of a full-grown female infant."

The state of the uterus, as examined through the vagina, forms an important datum among the evidences of pregnancy; for the description of the changes which the neck of the uterus undergoes at different stages of pregnancy, as perceptible by the finger introduced into the vagina, we must refer to the work itself, as well as for the modes of discovering the active and passive motions of the foetus in utero, or as the French term the latter, "*ballotement*." Dr. Kennedy makes use of percussion as a mode of detecting pregnancy; but, as he admits that similar sounds may be produced indifferently by the preg-

nant uterus and tumours of different degrees of consistence, and varying structure, we need not say more about it. We should be led from his classification to suppose that our author has a most exquisite touch, or wears the drum of his ear on his fingers' ends, as the larva of the gnat carries its windpipe in its tail, for he places the sound elicited by percussion, in the class of *tangible* symptoms. This is, however, only an "Error Loci," and we had not noticed it had we been able to point out a greater fault. We must here take a temporary leave of our author. We need not commend his work, for the extracts and analysis we have so far given, carry a better recommendation than our words. We have, however, still left unnoticed the most important and most triumphant part of Dr. Kennedy's work, which contains the application of auscultation as a test of pregnancy, and rather than give a curtailed or hurried view of this portion, we defer all notice of it to our next number.

(*To be continued.*)

The Cyclopædia of Practical Medicine. Edited by JOHN FORBES, M. D., ALEXANDER TWEEDIE, M. D., and JOHN CONOLLY, M. D., London. Published in Monthly Parts.

THIS work, which we have before noticed with commendation, is advancing steadily towards its completion, and will bear a favorable comparison with either of the Parisian similar undertakings. In a publication emanating from many different individuals, inequality of execution must be expected, and though quite willing to concede, to all the treatises, the title to respectability, there are some among them which both reflect much credit on the writers, and afford a fair specimen of the improved state of the medical knowledge of the day. We do not hesitate to class with the latter Professor Montgomery's Essay on the Signs of Pregnancy and Delivery, published in a recent number of the Cyclopædia. In a dissertation on a subject so trite, so often handled by able men, novelty cannot be expected; and when we took it up, we calculated on meeting nothing more than arrangement of facts well known, and judicious selection, but even to this inquiry *decies repetita*, the writer has added something new. The object of the Professor is to guide and assist the medical practitioner, in his relations with the public, in giving an accurate opinion on this point, either in the coroner's court, or a superior one, or in the more ordinary exercise of his professional duties.

After some preliminary matter as to the legal bearings of the question of the existence or non-existence of pregnancy, and the importance to the medical practitioner of coming to a right conclusion, on the result of which frequently depends "the claim to fair fame, virtue, and honour," of the subject of the inquiry, while in other instances of doubt much anxiety is frequently the result of uncertainty. The Professor then considers the signs of pregnancy as they are manifested in the altered functions of the womb, the increase of size of this organ, the sympathies produced by these new actions affecting changes in distant parts, and producing other unusual conditions of the female system.

Menses.—As the state of this secretion must always constitute a most important matter in the investigation of the subject of conception, and with rare exceptions is also the point which most particularly excites the attention of the subjects presented for inquiry, in whatever way they offer to us, whether as patients anxious to have doubts removed, whether brought under our consideration from the suspicion of others, and sometimes under pretence of asking advice, seeking the means of producing abortion, by endeavouring to deceive us. It would be impossible to abridge this section of the learned writer's dissertation, it contains so much condensed information, and we are the less desirous of doing so, as all the ordinary books treat amply on this head. For the same reasons we pass by affections of the stomach, wandering pains, salivation, &c. &c., and come to the state of the areola in the female breast.

Areola.—The alteration which all conversant with the matter acknowledge generally to take place in the part immediately surrounding the human female nipple in consequence of pregnancy, some, as Denman, believe may be produced by any cause capable of giving to the breasts a state resembling that which they are in during pregnancy. Others, of equal authority, as Smellie, and William Hunter, regard it as the result of pregnancy only. As may be supposed from this statement, practitioners of midwifery, and authors on this subject, have been much divided on the value of this "external indication" as a certain sign of detecting conception. Preceding writers, with the exception of Roederer, seem to have attended almost alone to the colour of the part, overlooking the other alterations mentioned by this author, whose description the Professor considers the best. It is as follows: the nipple enlarges and becomes more elevated, its colour becomes darker, and the surrounding circle, whose circumference is enlarged, is distinguished by a similar change of colour, and is covered with little eminences, similar to papillæ. To these charac-

ters our author wishes to add, "a soft and moist state of the integument, which, together with its altered colour, gives us the idea of a part in which there is going forward a greater degree of vital action than is in operation around it, and we not unfrequently find that the little glandular follicles are bedewed with a secretion, sufficient to damp and color the woman's inner dress." These alterations may be observed as early as the second month of pregnancy, at which period the turgescence of the nipple, and the development of the glandular follicles are more remarkable than the change of colour. When these circumstances exist in combination, they afford strong presumptive evidence of a present or former state of pregnancy, and the Professor says he never saw any other condition of the parts which could possibly be mistaken for it. In the accuracy of his observations we are disposed to place full reliance, as he has scrutinized the various shades discernible in the human areola, from the delicate roseate hue it presents in the fair native of the northern temperate zone, to the jet black it displays in the swarthy African negress.—(See Note, part xvii. p. 474.)

Ballottement.—For a full account of this test we must refer to the dissertation, and to the French writers, having introduced its mention here, for the purpose of saying that we agree with our author in opinion, that should it be distinctly felt it is proof positive of a foetus in utero. But, he observes, "we must be prepared for occasional disappointments in this test, as in others, inasmuch as the most carefully conducted examinations of this kind have failed of success when there was really a foetus of sufficient bulk to be thus felt, as we have ourselves experienced."

Auscultation.—From the novelty of this test, and the consequent interest it excites, an opportunity will probably occur of devoting more space to its consideration, than we are allowed by this brief notice of Professor Montgomery's opinion of its relative value. He justly says, the pulsation of the foetal heart once heard is decisive of pregnancy, because there is no other sound which can be mistaken for it. Not so the placental murmur, which may be produced by different causes, so that the nicest and most practised ear cannot detect any difference between the imitative sound and the true placental murmur, as both sounds are occasionally inaudible when there is a living foetus in utero. The absence of both will not justify us in pronouncing the non-existence of conception. In proof of this our well-informed author states a case of pregnancy, combined with ascites, that had advanced to the seventh month, where repeated

recourse was had to the stethoscope in the most skilful hands, but neither the pulsation of the foetal heart, nor the placental murmur could be heard. It is also to be observed, that auscultation is not available in an early stage of pregnancy, as both sounds are then necessarily inappreciable.

Among the alterations, in distant parts, producing unusual conditions in the female system, we will now proceed to consider alterations in the urine as a sign of pregnancy. M. Nanché has lately suggested, that the existence of caseum or peculiar principle of milk, formed in the breasts during gestation, when found, proves an unequivocal proof of pregnancy. The following process contains his method of detecting this principle. Let the urine of pregnant women or of nurses stand for some time, in thirty or forty hours a deposit takes place of white, flaky, pulverulent, grumous matter. The deposit is more readily procured by adding a few drops of alcohol to the urine. The editor of the *Lancet*, to whom the English readers are indebted for the first notice of M. Nanché's researches, informs us that he applied the test in one case and found it correct.—(See *Lancet*, No. 414, p. 675.) Professor M. tried it in several instances, and though in some he found the peculiar substance, he sums up its value in ascertaining pregnancy in the following words: "It is superfluous to say that there is such a host of accidental causes capable of altering the condition of the urine as ought to make us very cautious indeed how we ventured to attach credit to a symptom so equivocal." We may fairly hope, from the improved state of chemical analysis, that this host of accidental causes will be duly appreciated, and that this test will be more amply investigated. The learned writer informs us that Savonarola, who wrote in the year 1486, points to the changes in this secretion as an indication of pregnancy, and that Foderé thinks the condition of the urine described by Savonarola entitled to consideration, from having verified its accuracy.—(*Med. Legale*, tom. i. p. 435.)

Want of space obliges us to leave unnoticed many valuable sections, such as observations on early human ova, moles, hydatids, &c. &c. expelled from the uterus, and whose existence in that organ necessarily causes its enlargement, and leads to the inquiry, if in a *post mortem* examination there be any criterion by which an enlarged uterus, not containing any of the products of conception, can be distinguished from one owing its increase of size to that cause. The author of the dissertation now under consideration holds, that the *corpus luteum*, generally so called, affords this criterion, and we now proceed to examine this point.

Corpus Luteum.—It may be well to state, that so lately as 1808, a gentleman was tried at Liverpool for the murder of a female by poisoning. In this individual the uterus, on a *post mortem* examination, was found enlarged to the size it usually is shortly after delivery, and marks of the recent attachment of a placenta were also detected. No evidence was produced of the birth of a child, nor did any circumstance appear in evidence indicating the destruction of one; neither, after a careful examination of the fluids found in the stomach and intestines, was there any trace of poison detected. The jury acquitted the prisoner: there was disagreement in the evidence of the medical witnesses. The ovaries were examined after the trial, and not before; a corpus luteum was found in one of them. We now come to the inquiry how far this body affords a test of conception. It would be desirable, if our space allowed, to give the professor's able and minute account of the anatomical character of this very peculiar structure, but its insertion would occupy more space than our obligation to afford variety to our readers will allow us, and an abridgment would do injustice to the subject, we must therefore refer to the original, and we do not hesitate to assert, that in accuracy of description it is not surpassed, perhaps not equalled, by any other describer. It is within our recollection, when it was a common opinion in the dissecting room, and taught in the schools of anatomy, that the number of cicatrices in the ovaries afforded a certain proof of the number of times a woman had conceived; this notion, our learned author shows to be yet prevalent in books of high reputation. Among the anatomical facts adduced to overturn this opinion, the professor had an opportunity of examining the body of a woman who was known to have had six children, in whose ovaries there were only found two cicatrices. The high authority of Haller is coincident with the opinions advocated by the writer we are now reviewing. Haller continued his inquiries for many years, examined the bodies of above an hundred women, and makes the following observations: "Quotquot feminae nullam fecundationem ante mortem passae sunt, tot etiam incisae nulla corpora tutea ostendunt." (*Elementa Physiologiae*, vol. viii. sect. xv. Again, in his *Opera Minora*, vol. iii. p. 185. 186, "nullus unquam conceptus est sine corpore tuteo. Corpus luteum in vergineis animalibus nullum est, ex conceptione oritur, neque prius paratum est." We now return to the Liverpool trial: After the acquittal, Mr. Hay took the uterus and its appendages to London: there was a corpus luteum, as before stated, in one of the ovaries. He exhibited this to various men of eminence, and received certificates from Drs. Denman and Haigh-ton, Messrs. H. Cline, Charles M. Clarke, Astley Cooper, and

Abernethy, all stating that it exhibited appearances that could alone be explained on the idea of an advanced state of pregnancy. And it appears to have been universally allowed, that the discovery of the corpus luteum proved the fact beyond a doubt. In addition to these authorities, the Professor adds the weight of his own extensive researches, which have now been continued for a series of years, during which he never omitted a single opportunity, within his reach, of examining the bodies of women of all ages, and under all the varying circumstances of virginity, after intercourse, during gestation, and subsequent to delivery, at different periods from conception; these opportunities having been afforded by more than one large hospital, as well as by private practice.

“We have, also (he adds), dissected hundreds of the inferior animals with reference to this question, and have in our museum preparations of ovaries exhibiting the corpus luteum in different conditions in the human female, and also in cows, mares, sheep, sows, goats, bitches, cats, hares, and rabbits, and our firm conviction is of the truth of both Haller’s propositions, viz., that conception never happens without a corpus luteum, and that the corpus luteum is never found in virgin animals, but is the effect of impregnation.”

As the great object of our Journal is the diffusion of truth, and valuable facts, and as we wish to avoid controversy, we have not entered into an inquiry concerning the erroneous opinions of Sir Everard Hone and others, noticed by the Professor.

Signs of Delivery.—We have so far exceeded our limits, that we can only give one fact from the essay connected with this subject, which we select, as there are not many similar on record.

“We were (says the Professor) not long since called on to examine a woman five days after delivery, at the full time, and were particularly struck with the degree in which the parts had restored themselves to their natural condition, especially the os and cervix uteri, which hardly differed from their natural unimpregnated form and size. When ten days have elapsed since delivery, it is pretty generally agreed, that the time has passed when the state of the parts affords satisfactory evidence on this point.”

We cannot better conclude our sketch of Professor M.’s Essay, than by saying, in the language of Denman, (vol. i. p. 243), though from the common occurrence of pregnancy, and the particular attention which is paid, a faculty of discrimination is acquired, which generally prevents error; yet, now and again, mistakes are committed, and circumstances arise which embarrass. Should these latter take place, we know of no source of information where, in a short compass, more knowledge can be acquired on the various topics connected with conception than in this dissertation.

SCIENTIFIC INTELLIGENCE.

CHEMISTRY AND PHYSICS.

Formula for Determining the real Density of Gases, by Dr. Apjohn.—The writer expresses his opinion, that it was with great propriety the Association had directed the attention of chemists to a reinvestigation of the relative densities of the principal elementary gases. He had, in consequence, projected a course of experiments on this subject, which, however, had been interrupted by more urgent duties. The method of operating by a comparison, in two successive experiments, of the weights of equal volumes of the gas, and of atmospherical air, is recommended by the circumstance of its being independent of all knowledge of the volume of the gas or of the weight of a given bulk of atmospheric air; but it requires either artificial desiccation, which is extremely troublesome; or if the gas and air are saturated with moisture, then, for rigorous exactness, it requires the correction for vapour; to furnish which Dr. Apjohn proposes the following formula.

If the specific gravity of dry atmospherical air at any temperature t , and pressure p , be represented by 1, it will become, when the air is charged with vapour, $\frac{p-f}{p} + .625 \frac{f}{p}$, f being the tension belonging to vapour at the temperature t . For similar reasons, if x represent the specific gravity of any other gas, at the same pressure and temperature, $x \frac{p-f}{p} + .625 \frac{f}{p}$ will be its altered specific gravity.

after saturation with aqueous moisture. These expressions follow immediately from the theory of mixed gases and vapours. Hence if a be the experimental specific gravity of the gas, determined by the method of Thomson, the gas and the air employed being both satu-

rated with moisture,
$$x \frac{p-f}{p} + .625 \frac{f}{p} = a, \text{ an equation from which}$$
$$\frac{p-f}{p} + .625 \frac{f}{p}$$
we deduce
$$x = a + .625 (a-1) \frac{f}{p-f}.$$

From this formula it is obvious, that if the experimental specific gravity a be less than unity, it is greater than the truth; if greater than unity, it is less than the truth; and that the error is greatest

n the case of the gases which recede most from unity on either side. With hydrogen, it amounts to $\frac{1}{4}$ th, and with chlorine to $\frac{1}{9}$ th of the true specific gravities of the respective gases, assuming for these the values assigned to them by Dr. Thomson. In the case of nitric oxide, however, and even of azote, carbonic oxide, sulphuretted hydrogen, and some other gases, it is so small as to be safely negligible.—*Transactions of the British Association for Science.*

List of Simple Minerals in the Northern Counties of Ireland, by James Bryce, Esq.—In a small work, entitled “Tables of Simple Minerals, Rocks and Shells, with local Catalogues of Species,” published by me about two years since, there was given a list of the minerals found in the North of Ireland,—the list being confined to the minerals of the three northern counties, the productions of the others being but imperfectly known. Impressed with the importance of making catalogues of local productions more extensively known than they could be by means of a work of the above kind, I avail myself of the extensive circulation of the Philosophical Magazine, to make naturalists generally acquainted with the minerals of the North of Ireland.

Sir C. L. Giesecké has lately published an Irish Mineralogy, appended to his Descriptive Catalogue of the Royal Dublin Society's Collection. The appearance of this work should be hailed with pleasure by every one interested in promoting a knowledge of the Natural History of Ireland. It is to be hoped that it will speedily be followed by an Irish Flora, and an Irish Fauna. It was not, however, to be expected, that, in the present state of our knowledge, a work of this kind could be at all complete, although the indefatigable zeal and accomplished skill of Sir C. Giesecké have effected much. A chief inducement to the publication of the present article is to supply some of the deficiencies in his Catalogue. In the following list several species new to mineralogists will be observed. These have been all analysed and named by Dr. Thomson, who kindly permitted them to be published in the work above referred to. An account of some of them has since been published by him in the Edinburgh Transactions. For the discovery of many of these new species we are indebted to the active research of Mr. Patrick Doran, an intelligent mineral dealer.

Simple Minerals of Down, Antrim, and Derry.

Common Quartz.—Very common every where; forms large veins in the Grauwacké of Down, and in the Mica Slate of Western Derry.

Rock Crystal.—Frequent in the Trap formations, in very large crystals in that rock at Benbradagh near Dungiven: one mass seventy pounds in weight, and apparently a fragment of a crystal, was found there. It is found also in the granite of Down, and Mica Slate of Derry.

Smoky Quartz.—In the Mourne Granite, and the Trachytic Porphyry of Sandy Brae, Antrim.

Amethyst.—Found in the Granite of Mourne, by Mr. Patrick Doran, in small but beautiful crystals.

Flint.—In the Chalk of Derry and Antrim.

Common Opal.—Very common in the Trap rocks ; also in dykes of Greenstone, traversing Grauwacké in Down.

Semi-opal.—Rare : in the Trap of Antrim.

Precious Opal.—In the Porphyry of Sandy Brae, of a red and green colour. Sir C. Giesecké.

Calcedony.—Very common in Trap.

Carnelian.—On the shores of Lough Neagh, where, according to Sir C. Giesecké, Calcedony, Sardonyx, Onyx, and Agates, also occur.

Hyalite.—Occurs in glass-white botryoidal masses on the Granite of Mourne. Sir C. Giesecké gives the Causeway as a locality.

Heliotrope.—On the shores of Lough Neagh.

Iron Flint.—In Rathlin, and according to Sir C. Giesecké, on the shores near the Causeway.

Jasper.—In many parts of the Trap district, with the Coal of Coal Island, and in Boulders at Hollywood, Down.

Splintery Hornstone.—In Boulders, Ballymena ; Giesecké. Also in Greenstone, Carnmoney, near Belfast.

Conchoidal Hornstone.—In Boulders, Rostrover ; Giesecké.

Woodstone.—At Lough Neagh, and in the Alluvial Soil in the vicinity. Also rarely in Down.

Pitchstone.—Forms grains in Granite near Newry, and occurs in the Porphyry of Sandy Brae.

Lydian Stone.—At Rostrover, Down ; Giesecké. Also in Trap at Magilligan, Derry.

Flinty Slate.—Abundant in Down.

Pearl Stone.—Abundant in the Porphyry of Sandy Brae ; also in Greenstone near that place ; Giesecké.

Common Felspar.—Very common.

Glassy Felspar.—In masses, often very large, in the Trap rocks ; in small bits in the Sandy Brae.

Porphyry.

Adularia.—In small decomposed fragments, Mourne ; Giesecké. Mr. Doran finds it there in the same rock in large opalescent masses.

Labradorite.—Found by Mr. Doran in Mourne, of a dull gray colour, and faint play of colours ; it occurs in the Porphyry subordinate to Granite.

Disintegrated Felspar.—In the Mourne Granite.

Albite.—In the Mourne Granite, in small prismatic crystals.

Apophyllite.—Crystallized in prisms variously bevelled, of splendid lustre, from Dunseverie, near Giants' Causeway.

Mornite.—Found in the Greenstone of Mourne, by Mr. P. Doran,

and analyzed and named by Dr. Thomson. It occurs in greenish-red masses, and consists of silica, alumina, and lime.

Chlorphærite.—I found this substance lately in the Greenstone of Carnmoney, near Belfast. It occurs massive; colour dark-green; lustre vitreous. It is accompanied by specular iron, and is much more beautiful than the Chlorphærites of England or Scotland.

Common Hornblende.—Very common; crystallized in acicular prisms; Fairhead.

Basaltic Hornblende.—Occurs in lamellar masses at Fairhead and other places.

Slaty Hornblende.—Subordinate to primary Rocks in many places.

Kirwanite.—Found by Mr. P. Doran in the Greenstone and Porphyry of Mourne, and named by Dr. Thomson. It occurs in radiated concretions of a dark-green colour, and consists of silica, protoxide of iron, lime, alumina, and water.

Asbestous Tremolite.—In Mourne: Grauwacké.

Olivine and Augite.—Occur frequently in Trap rocks.

Common Schorl.—Is found in the Mica Slate of Antrim and Derry; also in the Mourne Granite.

Tourmaline.—In the Mourne Mountains, in various forms; Giesecké.

Friable Zoisite.—Of a dirty white colour. It occurs in light-gray decomposing Clay Slate near Analong, Mourne. First noticed by Mr. P. Doran.

Common Garnet.—In small dodecahedrons, of a reddish-brown colour, in the Derry Mica Slate.

Precious Garnet.—In small dodecahedrons, of a red colour, in the Mourne Granite; Giesecké.

Natrolite, Scholezite, Mesolite, Stilbite, Heulandite, Analcime, and Chabasite.—Occur more or less frequently in all our Traps. Sir C. Giesecké thinks the analcime rare in our Trap rocks. I have found it very common. Stilbite occurs also in Mourne Granite, of a white colour and bright pearly lustre.

Laumonite.—Discovered in four-sided prisms, of a pure white colour, in the Mourne Granite, by Mr. P. Doran. Sir C. Giesecké found it at Down-hill, in Trap.

Thomsonite.—I found what Dr. Thomson pronounced to be a new variety of this mineral in Greenstone near Ballymoney, Antrim.

Hydrolite and Leveyne.—Discovered in the Amygdaloid of Little Deer Park, Glenarm, by Mr. P. Doran. They are fully described by Dr. Thomson, in the Transactions of the Royal Society of Edinburgh, vol. xi. part ii.

Antrimolite.—This mineral has been analyzed and named by Dr. Thomson. It consists of silica, alumina, lime, and potash, and a large proportion of water. It occurs in cylindrical and conical masses, having an axis of calcareous spar, from which it is radiated, and resembles much the common fibrous mesotype. Sp. gr. 2.09.

- Lehuntite*.—Occurs massive, of a yellowish-white colour: constituents, silica, alumina, soda, and water. Sp. gr. 1·9. It was found at Carncastle near Glenarm, by Mr. P. Doran; analyzed by Dr. Thomson, and named in honour of Captain Lehunt.
- Harringtonite*.—This mineral occurs massive, of a snow-white colour: constituents, silica, alumina, water, lime, and soda: found at Portrush by Mr. P. Doran; analyzed by Dr. Thomson, and named in honour of a friend in Dublin.
- Mesole*.—At Downhill, in Amygdaloid; Giesecké.
- Erinite*.—Occurs in small detached pieces, of a green colour, in a Steatitic Greenstone. It consists of silica, water, alumina, and protoxide of iron. It was found by Mr. P. Doran at Dunseveric, under high-water mark;—from this circumstance the analysis gave a trace of common salt.
- Phillipsite*.—Of a yellowish colour, and in variously modified rhomboids, has been recently found in Amygdaloid in Island Magee, by Mr. P. Doran.
- Chalilite*.—A mineral very recently found by Mr. P. Doran in the Porphyry of Sandy Brae; and named by Dr. Thomson, from its resemblance to red flint. It consists of silica, alumina, water, lime, and peroxide of iron.
- Abrazite or Gismondine*.—Recently found in small globular masses in the Amygdaloid of Island Magee, by Mr. P. Doran.
- Epistilbite*.—Recently found by Mr. P. Doran in the Trap of Rathlin and Portrush.
- Clay Slate, Whet Slate, Drawing Slate, Alum Slate, Bituminous Slate, Claystone, Tripoli, Slate Clay, Potter's Clay, Lithomarge, Fuller's Earth, Green Earth, Mountain Soap, Bole, Wacké, Iron Clay*.—Occur frequently within the district.
- Steatite*.—Frequent in the Primary, and also in the Trap rocks.
- Potstone*.—Said by Sir C. Giesecké to occur in the Trap of Island Magee.
- Common Chlorite*.—Occasionally with Quartz in Primary rocks.
- Rock Cork and Rock Leather*.—Occasionally between the strata of chalk.[?]
- Emery*.—Is said to occur in Mourne.
- Topaz and Beryl*.—Are well known as occurring in the Granite of Mourne.
- Calc Spar*.—Of various forms; common every where.
- Satin Spar*.—Frequent in Trap rocks.
- Fibrous Arragonite*.—Met with at Downhill and the Causeway.
- Calcareous Tufa and Stalactites*.—Common; the latter chiefly in Trap caverns.
- Aphrite*.—Is said to occur on the Transition Slate, Mourne. I have not seen it.
- Agaric Mineral*.—Lining Flint balls, Ballycastle, along with Rock Cork; also at Sleive Gallion in the same manner.
- Hydrocarbonate of Lime and Magnesia*.—In the Amygdaloid of Downhill, in spheroids, having the appearance of a puddingstone.

It is called by Sir C. Giesecké, Hydrocarbonate of Lime. Dr. Thomson has discovered Magnesia in it.

Rhomb Spar and Carbonate of Magnesia.—Occur in the Magnesian Limestone at Holly and Belfast. The granular, compact, and fibrous varieties of Gypsum and Selenite are found in various places in Antrim, in the variegated marle subordinate to the new red sandstone.

Vulpinite.—I recently found this mineral in a Trap dyke at the base of the Cave Hill, near Belfast; it is of a laminated structure and sky-blue colour. Sir C. Giesecké mentions Rathlin as a locality; I know not on what authority.

Heavy Spar.—Occurs in lead mines in several places; also in the old Red Sandstone of Cushendun. *Sulphate of Strontia* is said to occur with it in Newtonards lead mine.¹

Strontianite.—The Arragonite of the Causeway contains a small portion of Strontian.

Alum.—Occurs efflorescent on the Slate Clay of the Lias formation at White Head, near Carrickfergus; also at Coal Island, Derry; Giesecké.

Aluminate.—In Trap at Gerron Point and Portrush.

Copper Pyrites.—With Galena, Newtonards, Down.

Iron Pyrites.—Abounds in Trap and other rocks.

Magnetic Iron Ore—Occurs in great abundance in Trap at Portmuck, Island Magee, where it was first found by my friend Mr. M'Adam; it is crystallized in octahedrons; lustre splendid.

Specular Iron.—Not uncommon in our Trap rocks, crystallized in rhomboids.

Micaceous Iron Ore.—In several places in Mourne Mountains. Anhydrous Bisilicate and anhydrous Disilicate of Iron have been found in Mourne by Mr. P. Doran, and recognized by Dr. Thomson. Red Hamætitæ, Clay Iron Stone, and Bog Iron Ore are met with in several places.

Galena and Green Phosphate of Lead.—Occur in the Newtonards lead mines, Down.

Radiated Gruy Antimony.—Said by Sir C. Giesecké to occur near Londonderry.

Rutile.—Occurs in Quartz in Mourne.

Coal.—Its different varieties are common.

Amber.—Said to occur in the Coal of Rathlin in small bits.—*Philosophical Magazine*, Aug. 1833.

Ritchie on Electro-Magnets.—Almost as soon as the mode of making an electro-magnet was invented, it was observed that the lifter of soft iron did not fall off when the contact was broken, but remained suspended for a considerable time after. Mr. Watkins has an electro-magnet which retains its lifter for days, and will even afford a magneto-electric spark for a long period after the contact with the battery has been broken. But what is a fact with one elec-

tro-magnet is not so to the same extent with another, and I have succeeded in getting a very powerful electro-magnet which possesses this property in a very inferior degree. One obvious circumstance which must modify the retaining power, is the quality of the iron and its degree of softness. The harder the iron, the more powerful will be the retentive force, and the longer it will continue. But the most remarkable circumstance which modifies the retaining power, and one which, as far as I know, has not been previously observed, is the *length of the magnetic circuit*. When the electro-magnet is very short, and the poles near each other, the retaining power is exceedingly small. When the magnet is very long, the retaining power is very great. I have three magnets, all made from the same kind of iron; one about six inches in circuit, another about a foot, and the other four feet. When connected with the battery they possess nearly equal powers. When the contact is broken, in the first case the lifter falls off almost instantaneously; in the second it does not fall off, but requires a force of several pounds to separate it a considerable time after the contact is broken; the third requires a much greater weight to separate the lifter when it has been removed a considerable time from the battery. By making one still longer, it is probable the retaining power will be increased.

The reason of this curious fact appears to be the following. The molecules of the electric fluid acting on each other with the same force, will obviously return to their natural position most rapidly when the length of the circuit, through which the action takes place, is diminished. If it be diminished till the coercitive force of the iron be overbalanced by the tendency of the molecules to return to their natural state of equilibrium, from which they have been forced by the action of the conducting wire, the electro-magnet will lose all its retaining power.

Before I discovered this curious and, I believe, novel fact, I was led to conclude that an electro-magnet had no power in inducing permanent magnetism on hard steel, when the magnetic circuit is completed by the lifter. The electro-magnet which I had used in all my experiments was the short one of very soft iron, which scarcely possesses any retaining power. With this magnet, though possessing a lifting power of 50 or 60 pounds, I could scarcely induce the slightest magnetism, and was therefore naturally led to the conclusion that an electro-magnet was deficient in this power. In repeating the experiments with a different electro-magnet, (though still by accident a very short one,) I always arrived at results almost negative. Mr. Children having stated to me that Mr. Watkins communicated powerful magnetism by an electro-magnet, induced me to re-examine the subject. When I discovered the circumstance which modifies the retaining power, it immediately occurred to me that the same circumstance would likely modify the power of inducing permanent magnetism. Having arranged an unmagnetized horse-shoe of tempered steel, I began, as before, with the short magnet; and found that scarcely any permanent magnetism was induced. Having taken

the next magnet in succession, and used it in the common way of magnetizing, a considerable degree of magnetic power was induced : when I employed the magnet four feet long, a much greater permanent effect was the result. The power of an electro-magnet to communicate permanent magnetism, even with the very long magnet which I have employed, is much inferior to that of a permanent magnet possessing the same lifting power. Hence, to magnetize to saturation it will be useful to employ a very long electro-magnet.

In a series of experiments which were read at a meeting of the Royal Society some time ago, I stated that when an electro-magnet had the magnetic state induced on it by remaining in contact with the battery for some time, it required a considerable time to induce an equal magnetic power by changing its poles ; but that the same power was again rapidly restored, by inducing the poles at the same extremities as at first. The success of the experiment depends much on the length of the soft iron horse-shoe magnet, and on the weakness of the battery. To render the effect very striking, a long magnet and a weak voltaic power are conditions absolutely necessary.— But the property does not only belong to an electro-magnet, but in a more striking degree to a permanent magnet of hard steel. If a horse-shoe of tempered steel be magnetized in the usual way and allowed to remain for some time (the longer the better), and if its magnetism be completely destroyed by an opposite touch, it will be found exceedingly difficult to communicate magnetism to it by reversing the poles. If after repeated touches a small power should be induced, it will not only be destroyed by a *single* touch of the same magnet, but will even have its poles reversed. If the operation be continued even for a considerable length of time, by successively changing the poles, it will still be found that it will be magnetized much more rapidly in the direction in which it was originally magnetized than in the contrary.

There appear to me only two ways of accounting for this curious fact. We must either suppose that the electricity having been first arranged in a particular direction is afterwards more easily arranged in trials in the same direction than in the contrary ; or, that in reversing the poles we do not destroy the whole of the magnetism formerly induced, but actually arrange a new series of atoms in an opposite direction ; so that when the magnet has lost all its power, it has done so, simply because we have two equal magnets formed on the same piece of steel, having their poles in opposite directions.

The magnetism which has been newly induced is more easily destroyed than that which has been induced days or years ago ; since by suddenly destroying the newly induced magnetism, the old, being held by a more powerful *coercitive* force, will regain its force when its temporary antagonist power has been removed.—*Ibid.*

Observations relative to the Structure and Origin of the Diamond, by Sir David Brewster, K.C.H. LL.D. F.G.S., &c.— In the year 1820, the author communicated to the Royal Society of

Edinburgh a singular fact relative to the structure of the diamond, accompanied with some conjectures respecting the origin of this remarkable gem : the present essay may be viewed as a continuation and extension of the same inquiry.

The author refers to the remark of Newton, that amber and the diamond have a refractive power three times greater in respect of their densities than several other substances ; and he quotes Newton's conjecture, founded on that remark, of the diamond being probably, like amber, an unctuous substance coagulated. In proof of the intimate relation between the inflammability and absolute refractive power of bodies, Sir D. Brewster adds the facts, that sulphur and phosphorus exceed even the diamond in absolute power of refraction, and that these three inflammables stand before all solid and fluid substances in their absolute action upon light.

Another close analogy between the diamond and amber, independently of their like locality and carbonaceous nature, was traced by the author in their polarizing structure. Both of these minerals contain within their substance small cells or cavities, filled with air, the expansive force of which has communicated a polarizing structure to the parts in immediate contact with the air. The description of this structure, which is displayed from sectors of polarized light encircling the globule of air, is illustrated by drawings.

The author contends that the peculiar polarizing power around the cavities in amber and in the diamond must have been occasioned by the expansive force of the confined substance, supposed to be gaseous, compressing the sides of the cells, while the substance of the minerals was in a soft and yielding condition. A similar structure may be produced in glass, or in gelatinous masses, by a compressing force, propagated circularly from a point.

Having thus shown that the diamond was at one time in a soft or pasty state, the author argues that this state was not produced by igneous fusion. For in his laborious examination of the cavities in crystals, both natural and artificial, such as topaz, quartz, amethyst, chrysoberyl, &c., and in salts, he observes the condition of many thousand cavities ; but in no case, neither in crystals formed by means of igneous fusion nor by aqueous solution, did he observe a single cavity in which the expansible fluid within had communicated a polarizing structure, similar to that around the cavities in the diamond. He believes, therefore, that the softness must have been that of semi-indurated gum ; and that the diamond was derived from the decomposition of vegetable matter, as is admitted to have been the case with amber. The crystallized condition of the diamond is not to be considered as decisive against this inference, since the mineral called mellite has a distinct crystallized form, while its composition and locality attest a vegetable origin.—*London and Edinburgh Philosophical Magazine*, September.

Compounds of Chromic Acid and Chlorides.—M. E. Peligot has formed several compounds of chromic acid with metallic chlorides. The bichromate of chloride of potassium is easily and economically

produced, by boiling a mixed solution of bichromate of potash and muriatic acid for some time; on cooling, a quantity of the salt in question crystallizes, in proportion to the quantities of ingredients employed.

According to M. Peligot, the theory of the formation of this salt is as follows: the muriatic acid at first acts upon the potash of the bichromate, and forms chloride of potassium, and water, and at the same time free chromic acid is developed. If, when all the potash has been converted into chloride of potassium and water, the solution is allowed to cool, it soon deposits large crystals of bichromate of chloride of potassium; so that all the bichromate of potash is converted into water and bichromate of chloride of potassium before the muriatic acid, supposed to be in excess, produces protochloride of chrome, which only happens by the decomposition of the salt which is formed.

The atomic reaction is thus given:—

Atoms employed.		Atoms produced.	
2 atoms chromic acid	1304	2 atoms chromic acid	1304
1 atom potash	589	1 atom chloride of potassium	931
2 atoms muriatic acid	454	1 atom water	112
<hr/>		<hr/>	
2347		2347	

The principal properties of this salt are, that it crystallizes very easily, the crystals are right prisms with rhombic bases; their colour is similar to that of bichromate of potash; they do not deliquesce. The action of water on this salt is remarkable: when a crystal is moistened with it, it becomes white and opaque; and if the solution be suffered to evaporate spontaneously, no crystals of the salt in question are obtained; but merely those of bichromate of potash.—This latter salt is, indeed, produced whether the liquor be concentrated by heat, or exposed to spontaneous evaporation. It appears, then, that water is decomposed by the bichromate of chloride of potassium: its hydrogen combines with the chlorine to form muriatic acid which becomes free, while its oxygen unites with the potassium.

This reaction produces precisely the products employed before the formation of the bichromate of the chloride, and the nature of the operation will be shown by transposing the atoms above given:

Atoms employed.		Atoms produced.	
2 atoms chromic acid	1304	2 atoms chromic acid	1304
1 atom chloride of potassium	931	1 atom potash	589
1 atom water	112	2 atoms muriatic acid	454
<hr/>		<hr/>	
2347		2347	

By the addition of a sufficient quantity of muriatic acid, to correct the oxidizing action of the water, the bichromate of the chloride is reproduced. On account of this action of the water, it is impossible to purify this salt by crystallization: it is requisite to press it be-

tween folds of blotting paper: it almost always contains a slight excess of chlorine.

The most economical process for obtaining this salt has been already stated; it may also be obtained, and in a more direct manner, by mixing two atoms of chromic acid with one atom of chloride of potassium, provided the solution be rendered acid by muriatic acid. It may be procured also by treating bichloride of chrome with water saturated with chloride of potassium; and in this case all the conditions favourable to its formation are fulfilled, for the water converts the bichloride of chrome into chromic and muriatic acid. If neutral chromate of potash be used instead of the bichromate, the crystals obtained are mixed with crystals of chloride of potassium.

The following process of analysis was preferred and employed on account of its simplicity:—A portion of the salt, dried between the folds of blotting paper, was dissolved in distilled water acidified by nitric acid, and nitrate of silver was then gradually added, and the chloride obtained was washed, dried, and weighed. The liquor, after the separation of the chloride of silver, was boiled with sulphurous acid; this converts the chromic acid into protoxide of chrome, and is itself converted into sulphuric acid: ammonia then precipitates protoxide of chrome by long boiling. The potash was then converted into sulphate by means of sulphuric acid, and its quantity thus determined.

The bichromate of muriate of ammonia resembles that of chloride of potassium in appearance and crystalline form, but it is much more soluble in water. By analysis it yielded:

Chromic acid	65.5
Muriatic acid	23.5
Ammonia	10.8
	<hr/>
	99.8

M. Peligot found that the bichromates of the chlorides of sodium, calcium, and magnesium were deliquescent; he was unable to procure the bichromates of the chlorides of strontium and barium, on account of the precipitation of their salts from water by the muriatic acid.—*Ann. de Chim. et de Phys.* lii. 267.

Chemical Composition of some Secondary Rocks.—The following analyses by two of our young friends will afford a good general idea of the chemical nature of several rocks connected with the coal formation near to Edinburgh.

1. Analysis of *Slate-clay*, from Wardie, near Newhaven, by Mr. Robert Walker: It does not effervesce with acids, neither does it form a jelly with them. When exposed to a red heat, it loses interstitial water, and splits into fragments. It is found alternating with sandstone and bituminous shale of the coal formation in the above mentioned neighbourhood. Its constituents are silica, 60.00;

alumina, 17.60; oxide of iron, 15.21; lime, 2.36; loss by heat, 4.41 : = 99.58.

2. Analysis of *Compact Felspar* from the Pentlands, by Mr. John Drysdale. Specific gravity, 2.53. Chemical characters: Effervesces slightly, and does not gelatinize with acids. Before the blow-pipe, infusible *per se*. Heated on platinum-wire, with an excess of the salt of phosphorus, it forms a transparent and colourless glass. Constituent parts: silica, 73.5; alumina, with a trace of iron, 11.23; carbonate of lime, 2.5; potash, 3.55; soda, 3.8; water 4.6 : = 99.20.

3. Analysis of *Greenstone* from Wardie, near Newhaven, by Mr. John Drysdale.—Effervesces, and does not gelatinize with acids. Before the blow-pipe, heated *per se*, it melts into a black glass; with the salt of phosphorus it melts into a transparent glass; yellow when hot, and colourless when cold. Specific gravity 2.873. Constituent parts: silica, 44.00; alumina, 11.4; iron (protoxide), 22.32; lime, 8.8; magnesia, 2.5; water and carbonic acid, 10.5 : = 99.52.

4. *Felspar Rock* of Wardie, near Newhaven, by Mr. Robert Walker.—The following is the analysis of an ash-grey rock, bearing a strong resemblance to compact Labrador felspar, but differing materially in chemical composition. It is found rising up among the strata of sandstone, slate clay, and other rocks of the coal formation, and indeed, at first sight, might be taken for a Neptunian rock, were it not that it is distinctly seen passing into greenstone. Its igneous origin is beautifully seen in one part, where it has torn off a part of the slate-clay (now imbedded in it), and which has evidently undergone a sort of semifusion. From the following analysis it will easily be seen that it has a very different constitution from any felspar. It effervesces violently with acids, and does not gelatinize: its constituents are, silica, 37.20; alumina, 9.75; iron, 20.00; lime, 8.57; magnesia, 3.78; carbonic acid and water, 20.80 : = 100.10.—*Edinburgh New Phil. Journal*, July 1833.

On Iodic Ether, by Mr. Johnston.—When a saturated solution of iodine in alcohol is poured into hot nitric acid in a large flask, a violent action takes place with evolution of nitric ether, acetic acid, and deutoxide of azote; and the colour of the iodic solution disappears. If the heat be kept up, and iodine in a solid state be gradually added as long as the action takes place, and the colour disappears, there is deposited, on cooling, a transparent yellowish oily-looking fluid, heavier than water, and possessing the following properties:

1. It has a strong penetrating odour, very different from that of the hydriodic ether of Gay-Lussac, and a sharp burning taste, the effect of which remains upon the tongue for a considerable time.

2. When free from excess of iodine it is of a very pale yellow colour; a slight heat, however, discolours it by causing partial decomposition.

3. It is not easily inflammable. It cannot be volatilized without

decomposition. The heat and light of the sun decompose it in close vessels; it becomes coloured, and deposits iodine in regular crystals. Kept in contact with the acid liquid in which it was originally formed, it remains colourless for a great length of time. Left to spontaneous evaporation in the open air, it thickens, becomes discoloured, and disappears very slowly. On the hand it volatilizes rapidly, and leaves a stain like iodine.

4. Its specific gravity at 60° Fahr. is about 1.34.

5. The boiling point of the compound is as high as 230° Fahr. When gradually heated in a small retort, a colourless fluid, having an ethereal odour, begins to distil over as low as 160°; while the ether in the retort gradually thickens and becomes dark coloured. At 380° this coloured liquid comes over very slowly in brownish red fumes, which condense in the beak of the retort into a dark brown solid, consisting chiefly of iodine. Over a spirit-lamp the distillation and decomposition are much more rapid; iodine is given off in copious violet-coloured vapours, and there remains a light shining charcoal, which in the flame of a candle burns away very slowly. The clear liquid which distils over by a gentle heat reddens litmus, but gives no ether by admixture with water.

In preparing this ether, if we continue the heat after the iodine has disappeared without adding more, the ether held in solution by the acid liquid is again decomposed, the solution becomes coloured, iodine is deposited and volatilized, and olefiant gas is given off. If the experiment be made in a tubulated retort, the iodine condensed in the beak and in the receiver is gradually converted, by the absorption of the olefiant gas which comes over, into Faraday's iodide of carbo-hydrogen, which crystallizes in long white prisms of one or two inches, or forms an entire massive coating in the interior of the long beak.

6. It dissolves largely in alcohol, either cold or hot, giving a colourless solution, from which water precipitates a large quantity of it, but of a brown colour. The alcoholic solution when distilled gives a colourless neutral liquid not troubled by water, but which, mixed with caustic potash, and placed in the light, becomes brown, showing that it contains iodine. In the retort there remains the brown opaque fluid. Ether mixes with it in all proportions, and by agitation separates it from the acid liquid in which it is formed. It might, therefore, be employed with advantage in the preparation of the iodic ether, were it not difficult again to separate the whole of it by water without decomposition. Water dissolves it in small quantity. When the yellow ether is washed with water it becomes less in quantity, less fluid, and of a brown colour, which by further washing gradually deepens to a dark brownish red. The aqueous solution is colourless, and slightly acid, due, as appears from its reactions, to the presence of a small quantity both of iodic and of hydriodic acid.

7. Sulphuric acid in the cold decomposes it, rendering it dark brown; when heated it becomes dirty black, and vapours of iodine are given off. A few minute prisms of a yellowish colour also con-

dense in the upper part of the tube, which are probably iodide of carbo-hydrogen (iodide of etherine). On muriatic acid it floats unchanged, but as the lighter parts evaporate or are dissolved it becomes brown and dense, and sinks to the bottom; the acid at the same time becomes yellow. Nitric acid in the cold does not act upon it. The acid solution in which it is formed retains it in solution only till it cools. When once separated by cooling, it cannot be redissolved by the application of heat.

8. When chlorine is passed over it, muriatic acid is formed, and the ether becomes red. This gas, however, does not seem to be capable of decomposing it entirely; for when gently heated after long exposure to an atmosphere of chlorine, it gives off chlorine and muriatic acid vapour, and sinks apparently unchanged, except in colour, when put into water.

9. When obtained by decantation from the acid liquid in which it is formed, the ether reddens litmus; and from the ease with which water and the caustic and carbonated alkalies discolour and partially decompose it, and the impossibility of distilling it, I have not hitherto obtained it in a state, in which, in the air at least, it does not possess this property in a slight degree. A weak solution of caustic potash or soda acts upon it like water, discolouring it and diminishing its volume; but after washing again with water to remove the alkali, a slight action upon litmus is still observable. This is to be ascribed solely, I believe, to partial decomposition. A concentrated solution of a caustic fixed alkali acts upon it, with the evolution of heat and some gas; and when allowed to subside after agitation the alkaline solution is of a red colour, and the ether, much diminished in quantity, is colourless, or nearly so. Agitated with pure water the ether again becomes coloured and tinges litmus. With a sufficient excess of caustic alkali it appears, like muriatic ether, to be resolvable into a colourless oil containing only carbon and hydrogen.

The alkaline solution evaporated to dryness, and the dry salt redissolved give no trace of iodic acid. It precipitates lead of the well-known yellow colour, but it does not precipitate muriate of barytes. Nitric acid separates iodine from the solution.

10. After being treated with caustic potash in a concentrated solution, potassium has a very slight action upon it, becoming tarnished, evolving minute bubbles of gas, and making the liquid slightly brownish. If potassium be dropped into the ether at first obtained, much action and evolution of heat takes place, ether and an iodide are formed, and charcoal remains behind.

11. When dry phosphorus is thrown upon it considerable action takes place, with evolution of heat, and an iodide of phosphorus is formed. The same takes place under water, and the supernatant liquid contains hydriodic acid, from which nitric acid precipitates the iodine. On sulphur it has no action.

12. Mercury does not act upon it in the cold, unless the ether have become discoloured by partial decomposition, when the mercury

removes the free iodine to which the colour is due. When slightly heated a greenish pellicle is formed on the mercury, and the colour developed in the ether by heat disappears. This greenish pellicle dried and heated becomes red, showing that some iodide had been formed. The decomposition, however, is due to the heat and not to the action of the mercury.

This ether may also be prepared by the substitution of sulphuric ether for alcohol, in which case, after the violence of the action has ceased, the bottle may be placed in the sun for several days, and a little more iodine added as the colour slowly disappears. The addition of a little sulphuric ether will at any time by agitation give a solution of the iodic in common ether, which floating on the top may easily be separated.

The supernatant acid liquid in the first process contains a large quantity of iodine in solution, partly in the state of ether, partly, probably, as Farraday's iodide of etherine, and partly as Serullas's periodide of carbon. The ether is not wholly separated by subsidence on cooling; a further portion is thrown down by the addition of water, and a second portion by saturation with an alkali, though in both cases slightly coloured. Agitation with sulphuric ether separates it most completely. Saturated with soda, the supernatant liquid becomes dark coloured, and by evaporation may be brought to a treacly consistence, but does not crystallize. The dark colour is not due alone to free iodine, for it does not disappear by long exposure to the air, nor by heating, but to carbon, which exists either in a peculiar state of combination with iodine, or as ulmic or azulmic acid. By evaporation to a syrup, and subsequent dilution with cold water, a carbonaceous matter is separated, which is soluble in hot water, and in solution throws down a yellow iodide from the salts of lead. Alcohol does not separate the iodine from this carbonaceous matter, but it may be driven off by the heat of a spirit-lamp, leaving a spongy charcoal.

When the acid liquid is diluted and supersaturated with ammonia a yellow precipitate falls, which is chiefly Serullas's periodide of carbon. This compound is sometimes obtained also on decomposing the ether by dry caustic potash. Nitric acid throws down iodine from the filtered ammoniacal solution, and by evaporation it becomes dark coloured as above stated. The saturated supernatant liquid does not precipitate chloride of barium.

What is the true constitution of this interesting compound it is difficult to decide. From the mode in which it is formed by the aid of nitric acid we should be led to infer the presence of oxygen; while, on the other hand, its properties and the absence of iodic acid, both in the caustic alkaline solution by which it has been decomposed, and in the supernatant liquid, which even when saturated gives no precipitate with muriate of barytes, lead to a contrary conclusion. When iodic acid is heated in alcohol decomposition takes place, and by distillation the whole of the iodine passes over, the odour of hydriodic ether, which is perceptible, showing that a small quantity of that compound has also been formed. The presence of

alcohol, therefore, in a hot solution, seems incompatible with an oxide of iodine; and if such be the case it will easily account for the absence of oxygen in the iodic ether, though formed by the agency of nitric acid. It is probable that nitric ether is formed first, and that from its decomposition the new compound containing iodine results. It seems to me, therefore, most likely that the ether described in this paper is a compound of iodine and etherine ($4\text{C} + 4\text{H}$), belonging probably to the same class of compounds as the solid iodide of Mr. Faraday. Indeed in one experiment, instead of the ether subsiding as I expected, I obtained a group of large crystals of the solid iodide of carbo-hydrogen.—*London and Edinburgh Philosophical Magazine*, June, 1833.

ANATOMY AND PHYSIOLOGY.

Numerical Relations of Animals.

1. MAMMALIA.

	Year.	No. of Species.
Linnæus enumerates,	1767	221
Humboldt,	500
Desmarest,	1822	850
Temminck,	1827	860
Lesson,	1827	1124
Minding,	1829	1230
Fischer,	1830	1126
Bonaparte,	1831	1138

If we take into account the discoveries of these few last years, we may reckon in round numbers the living species at 1100. Lesson enumerates many species which are doubtful; and Temminck mentions those only which have been well determined.

2. BIRDS.

	Year.	No. of Species.
Linnæus,	1767	904
Buffon,	1700
Lesson,	1830	6500
Bonaparte,	1831	4099

3. AMPHIBIA.

Linnæus,	1767	204
Lacépède,	1802	500
Merrem,	1820	579
Humboldt,	700
Bonaparte,	1831	1500

4. FISHES.

Linnæus,	1767	376
Bonaterre,	1788	746
Lacépède,	1802	1306

	Year.	No. of Species.
Cuvier,	1827	5000
Bonaparte,	1831	7000

5. MULLUSCA (INCLUDING THE CEPHALOPODA.)

	Year.	No. of Species.
Linnaeus,	1767	832
Lamarck,	1822	3028
Schmidt,	1830	4548

6. ANNELIDES.

Linnaeus,	1767	50
Blainville,	1827	315

7. CRUSTACEÆ.

Linnaeus,	1767	111
Fabricius,	1793	259

8. ARACHNIDA.

Linnaeus,	1767	97
Fabricius,	1793	138

9. INSECTS.

Linnaeus,	1767	2616
Fabricius,	1800 to 1805	12,513

According to the different Orders, the numbers are as follows :

	Fabricius.	Linnaeus.
Coleoptera,	4330	903
Diptera,	1224	262
Hymenoptera,	2101	314
Neuroptera,	170	83
Aptera,	123	62
Orthoptera,	235	..
Lepidoptera,	2919	780
Hemiptera,	1384	253
Myriopoda,	27	19

It may not be uninteresting, as regards insects, to compare the progress of the classes and species with the number of genera, between Linnaeus in 1767, Fabricius from 1794 to 1805, and Latreille, in the 2d edition of Cuvier's *Regne Animal*, in 1829.

Number of Genera.	Latreille.	Fabricius.	Linnaeus.
Crustacea,	209	12	3
Arachnida,	66	11	4
Insecta,	1423	431	..
Coleoptera,	700	181	20
Orthoptera,	36	8	12
Hemiptera,	84	46	7
Neuroptera,	27	12	10
Hymenoptera,	207	83	3
Lepidoptera,	87	15	10
Diptera,	258	81	10

Number of Genera.	Latreille.	Fabricius.	Linnaeus.
Myriopoda,	8	2	2
Thysanura,	4	5	5
Parasita,	9		
Suctoria,	1		
Rhipiptera.	2

10. ENTHELMINTHIA.

	Year.	No. of Species.
Linnaeus,	1767	15
Zeder,	1803	390
Rudolphi,	1819	1100

11. RADIARIA OR ECHINODERMATA.

Linnaeus,	1769	46
Blainville,	1830	280

12. MEDUSA.

Linnaeus,	1767	11
Eschscholtz,	1829	208

13. ZOOPHYTA OR POLYPI.

Linnaeus,	1767	134
Blainville,	1830	536

14. ROTATORIA.

Linnaeus,	1767	8
Ehrenberg,	1832	291

15. INFUSORIA.—POLYGASTRICA.

Linnaeus,	1767	8
Ehrenberg,	1832	291

The total number of known living species of animals thus appears to be :

Mammalia,	1,100
Birds,	6,500
Amphibia,	1,500
Fishes,	7,000
Mollusca,	5,000 ?
Annelides,	315 ?
Crustacea,	1,500
Arachnida,	3,000 ?
Insecta,	50,000
Enthelmintha,	1,500
Radiaria,	280
Medusaria,	208
Polypi or Zoophyta,	536
Rotatoria,	119
Infusoria,	291

Total Number, 78,849

The number of fossil animals may be stated as under :

Mammalia,	.	.	.	120
Birds,	.	.	.	25
Amphibia,	.	.	.	50
Fishes,	.	.	.	250
Mollusca,	.	.	.	3,100
Crustacea,	.	.	.	100
Insecta,	.	.	.	150
Radiaria,	}	.	.	350
Annelides,		.	.	
Zoophyta,	.	.	.	500

Total, 4,645

In order to compare the numerical relations of the animals of single lands, we shall place together the Fauna of Greenland, that of Wurtemberg, and that of the vicinity of Nice, or of the Maritime Alps. The animals of the Fauna of Greenland are, according to Fabricius's *Fauna Grönlandica*, Hafniæ, 1780 ; the Wurtemberg animals are from a small work entitled, "*Über Wurtemburgs Fauna*," Stuttgart, 1830 ; the animals of the Nice district are from Risso's *Histoire Naturelle des principales Productions du Midi de l'Europe*, Paris, 1827. These three may be considered as the representatives of the middle and southern parts of Europe ; and although Greenland does not belong to Europe, it may be considered as a general representative of the polar Fauna.

	Greenland, Lat. 60°-70° N.	Wurtemberg, Lat. 47° 30'-49° 30' N.	Nice. Lat. 43° N.
Mammalia, .	31	41	59
Birds, .	54	213	306
Amphibia, .	1	18	40
Fishes, .	44	47	400
Crustacea, .	38	(with Ler- nea), 4000	200
Arachnida, .	15		100
Insecta, .	64		1600
Molusca, .	61	100	1085
Annelides, .	62	13	82
Enthelmintha, .	25	48	70
Radiaria, .	14	..	100
Zoophyta, .	58	11	200
Infusoria, .	..	12	..
	<hr/> 467	<hr/> 4503	<hr/> 4242

It may here be observed, that the Infusoria and Enthelmintha are but slightly noticed : there may be in Wurtemberg 300 or upwards of Infusoria, and even more of Enthelmintha ; the marine and other Infusoria of Greenland and Nice are not mentioned ; and it is evident that the number of insects is too small for the maritime Alps.

Even more interesting than the numerical relations are those connected with colour, which, however, can only be studied with effect in great collections, and with the assistance of good coloured drawings and engravings. On this subject, we have the following, among other questions, to answer. How are the colours related in the animal kingdom in general, and also in the separate classes, orders, and genera? Do we find particular colours predominating in certain genera, orders, &c., or are they peculiar to them? What are the relations of the dorsal and abdominal colours, and latero-dorsal and latero-abdominal colours? What influence has light? How are the colours related in warm and cold countries? How are the colours in the animal kingdom disposed, according to latitude and longitude, and height above the level of the sea? Have the sea and fresh-water lakes, &c. determinate influences on differences of colour? Investigations of this kind belong to general natural history, and the characteristic of the animal kingdom. Unfortunately, these general physiognomical relations in zoology have hitherto been much neglected. Botanists are further advanced in their representations in the delineation of the physiognomy of plants. It is exceedingly to be regretted, that, with the exception of some partly antiquated, partly unsatisfactory, or, when good, illustrative only of particular classes, treatises on the geographical distribution of animals, such as those of Zimmerman, Latreille, Prichard, Ferusac, Minding, we have no general classical work on this beautiful branch of zoology.—*Edinburgh New Philosophical Journal*, October, 1833.

PATHOLOGY AND THERAPEUTICS.

Cases of Empyema cured by Operation.—Case I. Pasquet Benjamin, twenty-five years of age, of a weak constitution, was admitted into the hospital at Tours, on the 1st of January, with intense fever and variolous eruption. So great was the agitation under which he laboured, that he could not be kept in bed. The eruption was imperfect. At the end of January the following symptoms existed; short, difficult, and rapid breathing; a sensation of oppression and heaviness at the diaphragm; a sense of suffocation upon the least motion; constant cough; incapability of lying on the right side. The left side of the chest was sensibly distended; the intercostal spaces being much broader than natural, and projecting at the lower and posterior parts. The heart was thrown towards the right side, and its pulsations were perceptible at the inferior part of the thorax. When the patient moved, fluctuation and undulation were evident even to the sight and hearing, without having recourse to auscultation.

February 1st.—The operation for empyema was performed by M. Herpin. The quantity of pus thrown out had so greatly depressed the diaphragm, that the incision was made between the tenth and eleventh ribs, at about an inch from the costal angle, where the fluctu-

ation was most evident. An incision was made in the fold of the skin, about two inches long, and parallel to the direction of the intercostal space. The pleura being exposed, an opening of two or three lines long was made into it with a bistoury. Liquid, inodorous pus, mingled with serous shreds, at first escaped by jets, and with force. When about a pint was evacuated, the wound was dressed with a compress of lint, with holes in it to admit of still further discharge. For several days the bed of the patient was soaked with pus. The discharge became more and more fœtid, and blackened the catheter which was introduced each time the wound was dressed. The edges of the wound were tumefied and inflamed, and the patient was in pain and much agitated. His face became pale and anxious, eyes sunken, skin of a dull colour, and there was great general depression.

In this state he continued until the middle of March; he was then directed to take kino and quinine in infusion, and an injection was thrown into the wound of decoction of kino, with a few drops of solution of chlorate of lime. From this time he gradually improved; the pus became whiter, thicker, and of good quality. In a few days there was little or no suppuration, and on the 2d of May the injections were discontinued.

Three days afterwards, the patient, having eaten more than usual, was attacked with shivering and fever, and spasms of the abdominal muscles, particularly on the left side. The face and feet were œdematous, and the oppression and pain of the side returned as violently as at first.

May 6th.—A large quantity of bloody pus was evacuated by means of a catheter, which was now again discoloured. The injections were repeated; low diet. He again improved. The pus now seemed to concentrate itself at the bottom of the pleural cavity, and grumous and fibrous clots still passed through the catheter.

Towards the end of May there was very little discharge, and now, in order to introduce the catheter to the bottom of the purulent cavity, (about four or five inches deep from the wound,) it was necessary to overcome a resistance, which appeared to depend upon adhesion of the lungs with the pleura of the ribs and diaphragm.

May 30th.—The injections were discontinued; the kino mixture was again given; and a blister was applied to the nape of the neck, and kept open for some days. From this period the patient was free from fever or oppression, and he gradually grew fat, and his skin assumed a healthier colour.

On the 2d of July he was presented to the Medical Society of Tours. There was perfect resonance on the right side of the chest; the left side also gave a clear sound at the upper part, but at the inferior part, and around the spot where the operation had been performed, the sound was dull. It is to be observed, that this patient never expectorated pus, although he had coughed a good deal, and his breathing was impeded.

Case II.—This was the case of a child seven years of age, who had had measles, and been much neglected some days after the ap-

pearance of the eruption. Catarrh followed, and subsequently empyema, which caused a projection of the thorax near the inferior angle of the left scapula. M. Herpin made an opening with potassa fusa, and afterwards threw in injections with barley-water and honey. The suppuration continued for six weeks; the wound then closed, and soon after the little patient complained of oppression and sense of suffocation. The wound was again opened, and suppuration went on for several weeks. The parents confessed that they had formerly laboured under syphilis. M. H. prescribed the following medicine: syrup of sarsaparilla, with deuto-chlorate of mercury, in appropriate doses. In a short time the suppuration diminished, the wound cicatrized, and the child was restored to health. The side of the thorax which had been affected did not, however, increase in size as in the other, and this young person, who is now (1832) twenty-three years old, is a little deformed in shape, although in the enjoyment of good health.

In both these cases the empyema arose from the same cause—repercussion of an exanthematous disease. They were both treated by making an opening which permitted the air to enter freely into the chest, and both did well. Here the resemblance between the two stops. It did not appear that the child experienced such severe symptoms as the man; but the latter had a relapse, and was only saved by the treatment described. M. Herpin makes but few remarks upon these cases: he merely states, that he prescribed mercurials because he has always found them efficacious in removing the bad effects of the morbillous virus.

Case III.—A soldier, æt. twenty-six, after several attacks of peripneumonia, was affected with empyema, which caused a projection below the inferior angle of the right scapula. He entered the hospital the 27th of March, and on the 23d of April an opening was made into the chest. An ichorous discharge of pus followed, which afterwards became so fetid, that the patients all left the ward when he was dressed. Fever succeeded, which placed the patient in danger for several days. He took internally decoction of bark; and an injection of the same mixture was used, with a small quantity of a solution of chlorate of lime. The whole surface of the body was afterwards covered with a miliary eruption; the suppuration diminished, and was less fetid; the eruption died away; the fever subsided. He became convalescent, and left the hospital perfectly cured on the 22d of May.

To these three cases, for which we are indebted to M. Herwin, we add the following, from the *Gazette Scientifique de Seine-et-Oise*; which is still more remarkable, on account of its various complications, and the length of time the discharge continued.

Case IV.—M. R., a cavalry officer, æt. twenty-eight, of lymphatic constitution, had frequently had syphilis. He was admitted into the Hospice de Versailles on the 19th August. He was treated for abscesses in different parts of the body, and went out convalescent November 6th. On the 22d he was again admitted, on account of a tumor situated on the left side of the chest, above the sixth rib, which had appeared without any assignable cause. It was red, soft,

and painful. Forty leeches were applied in two days, but the pain was not relieved. On the third day an incision was made, and it was ascertained, upon the introduction of a sound, that there was caries of the rib. The pain ceased for a very short time, but returned on the following day. There were now dyspnœa, dry and frequent cough, striated expectoration, and, in fact, every symptom of intense pleuro-pneumonia. He was bled, and the next day was much exhausted and insensible. Revulsive remedies were employed. The right side of the chest and the neck were attacked with erysipelas. Delirium, and increased difficulty of breathing.

Notwithstanding this complication of severe symptoms, the pulmonary affection was soon relieved, and the expectoration was easier. The respiratory sound was heard in the right lung, but in the left it was feared that there was either congestion or effusion; and the subsequent dilatation of this side of the chest removed all doubt upon this point.

As soon as the inflammatory symptoms had entirely subsided, a caustic issue was made. When the slough separated, above two pints of yellowish serum were discharged, in which was floating concreted albumen, which, by blocking up the opening, prevented, at moments, the exit of the fluid. A plug was afterwards inserted into the wound, which was covered with linen with holes made in it. In the course of the next few hours about ten ounces of fluid were evacuated; but, although the patient was much relieved, the suppuration continued fetid and abundant: even the expectoration was purulent. Injections of solution of chlorate of lime were employed, and immediately after the patient complained of tasting the chlorate in the throat. Reduced as he was to a state of emaciation, he was now attacked with acute articular rheumatism, which rendered it necessary to bleed him several times. The pains in the joints were removed, but inflammation of the periosteum remained upon the fibula and tibia. The former went off; but the latter terminated in an abscess, and left the bone exposed to the extent of four or five inches. In six weeks this wound was healed. The two abscesses in the thorax, namely, that of the carious rib, and that from the empyema, lasted a much longer time. Nearly two years elapsed before the discharge from the latter ceased, but ultimately the patient left the hospital perfectly cured.

It did not appear that the venereal taint of this patient rendered mercurials necessary. He recovered, notwithstanding every circumstance appeared unfavourable: his temperament, his previous diseases, and the various complications of his case. The appearance of the fluid discharged was also bad; for it has been remarked, that there is a greater chance of effecting a cure in empyema when the fluid is purulent than when it is serous. Both the skilful surgeons who have recorded these cases employed the caustic potash to give exit to the fluid. At no very distant period, abscesses of the pleura were considered as totally distinct from ordinary abscesses. The principal object was to prevent the admission of air; and, al-

though the old opinions upon the subject are now a good deal modified, the use of the caustic issue in such cases has not been before mentioned. We perceive, however, that this mode of making an opening is not more dangerous than an incision by a bistoury.—*Lond. Med. and Phys. Journal*, Sept. 1833.

Case of a Cyst containing a Human Fœtus, in the Mesentery of a Boy.—The visceral hydatids developed in the cavity of the pelvis may be confounded with a crowd of tumours too numerous to name, and which, moreover, have been repeatedly studied. But there is one especially deserving attention from its extreme curiosity, and which has been described in a periodical, now difficult to be procured, namely, the “*Recueil des Mémoires de la Faculté de Médecine de Paris*,” and entitled case of a “cyst containing a human fœtus developed in the mesentery of a boy of fourteen.”

“Amédée Bissieu, son of M. Bissieu, of Vernucuil, department de l'Eure, was born in 1790, of a young, well-formed, healthy woman, who had previously borne another child, well-formed, and of good constitution. On the night during which his mother supposes he was conceived, one of the alarms then so frequent in France threw the town into violent agitation, and called the inhabitants tumultuously to arms. During her pregnancy, Madame Bissieu experienced some mental afflictions, as well as frequent indispositions, nevertheless her labour was propitious. It was supposed that during labour an unusual quantity of water escaped through the vagina. Immediately after birth the infant was confided to a nurse, who finding him weakly and unhealthy, almost despaired of bringing him up. Returned to his father's house, he complained from his first lisp, of pain in the left side of the chest and belly. The volume of these parts was so considerable that it was feared he laboured under organic disease; but the size was, nevertheless, so variable, that nothing was done beyond accommodating his clothes to these variations. However, as he grew up these fears subsided, but the boy's body continued thin; he continually complained of slight pains in the side; his appetite was fantastic and irregular, and he frequently suffered from indigestion. On dressing him one day it was perceived that two of his left ribs were more elevated and prominent than the others; but this was attributed to the effects of a habit he had contracted of sucking the right thumb, and inclining his body to that side. Still less attention was excited by the circumstance, as at this time the lad was distinguished for a degree of gaiety, vivacity, and intelligence, beyond his age. He was sent to a boarding school at Rouen, where, having spent eighteen months, he was suddenly attacked, on the 13th Nivose, year twelve, with acute pain in the side and left hypochondrium, with continued fever, with exacerbations, and a feeling of oppression. Great swelling of the pelvic region also occurred. He was bled and purged. The fever continued, and the swelling made progress. On the seventh day of his illness, M. Blanche, the surgeon, perceived distinctly in the abdomen, a hard and very painful tumour extending

along the false ribs to the crest of the ilium, rounded from side to side, and of the size of a large melon. Calming treatment was employed, but the pain did not diminish until an abundant purging of fœtid purulent matter had taken place. The marasmus, however, proceeded, and after some months' useless treatment he was sent home. On his arrival, MM. Guerin and Bertin Desmardelles recognised the tumour. A continual cough soon occurred, accompanied by purulent and fœtid expectoration, and a purging of matter also fœtid, in the midst of which, six weeks before his death, was found a parcel of hairs rolled up on themselves. He died on the 23d Prairial, an. 12, six months after the attack at Rouen.

“Autopsy.—The opening of the body took place next day, in the presence of MM. Guerin and Bertin Desmardelles. These physicians discovered in the left hypochondrium, below the spleen, a large, thick, membranous sac, adhering to all the surrounding parts, and especially to one of the large intestines, which they presumed to be the colon; and in this cyst, amidst purulent, thick, and yellow matter, two masses were of nearly equal volume, situated transversely before the vertebral column, one applied to the other, but nevertheless, quite distinct. Of these two masses, one placed inferiorly, was composed of a large handful of tangled felted hair; around this were two little parcels of hair, like what passed by stool six weeks before death. The other mass, situated higher, consisted of an oblong fleshy, and bony substance, covered with skin. At one of its extremities was seen an imperfect head, with hair, teeth, a deformed nose, a kind of orbit at one side, and an ear at the other. At the opposite extremity was a limb-like appendage, ending in some tongue-shaped points armed with nails. Lastly, from the centre of the mass proceeded a thick, short, ligament, inserted into the parietes of the cyst.

“Deeming the case deserving of more minute researches, MM. Guerin and Desmardelles lifted the fleshy mass out of the pelvis, and took it away, together with the stomach, spleen, and a part of the large intestine. They ascertained, then, that there existed no trace of sexual conformation, external or internal, and that the sex of Amadée Bissieux was indisputably masculine. Lastly, they found, on dissecting the rest of the body, that the liver was very voluminous, and the lungs whitish and infiltrated with pus. Twenty-two days after this, the body was exhumed, in order to verify the facts now related. MM. Delzeuzes and Bronard, who were charged with the investigation, found no trace of any sexual organ but those belonging to the male. The bladder was cautiously separated, the vesiculæ seminales discovered; the rectum examined internally and externally, and nothing extraordinary found. Lastly, the external parts of generation were carefully inspected, and the testicles, vasa deferentia, and penis, were found to be perfect in formation, but small in size.

“Remarks on the Case.—A fact so extraordinary excited universal attention, and M. Planche forwarded the preparation to the Fa-

culty of Medicine of Paris, and I (said M. Dupuytren) was commissioned to report on this great anomaly in the laws of nature.

“The first fact I ascertained relative to the position of the *fœtus*, was, that it lay in a cyst of the transverse mesocolon, which had only communicated very recently with the intestine, through the destruction of a partition by which they were separated. In continuing this examination, I ascertained that the organized mass contained in the transverse mesocolon had many points of resemblance to a *fœtus*, but that it offered also numerous peculiar dispositions, some of which depended essentially on vices of conformation, while others appeared to be dependent on changes of form successively effected by time and the sojourn of the mass in the mesocolic cyst. The dissection of the mass was, however, the surest mode of determining the nature of this production. I did so with great care, and I discovered the trace of some organs of the senses, a brain, spinal chord, very voluminous nerves, muscles degenerated into a sort of fibrous matter, a skeleton, composed of a vertebral column, a head, a pelvis, and the rudiments of almost all the limbs. Lastly, in an umbilical chord, very short and inserted into the transverse mesocolon, beyond the cavity of the intestine, an artery and vein ramified in each of their extremities in the *fœtus*, and the individual to which it belonged.

“The existence of these organs sufficed certainly to establish the individuality of this organized mass, although in other respects it was destitute of organs of digestion, of respiration, of the secretion of urine, and of generation. But the absence of these parts, at most, could only render it one of the monstrous *fœtuses* destined to perish at the moment of birth.

“We shall not dwell on suppositions, more or less problematical, advanced respecting the presence of this *fœtus* in the body of the young Bissieu. We shall only remark, that it is by no means rare to see twins born adhering by the back, belly, head, or by several parts at once. A degree of compression, more or less strong, exercised by the mother's organs on the soft embryos, either during conception or soon after it, may produce these monstrosities. In other cases, not extremely rare, the twins are so identified, that many organs are deficient in each, and are replaced by common organs, which serve for the existence of both individuals. In the first case, the monstrosity depends on a mechanical cause, in the second it depends on a primary fault in the organization of the germs. One of these explanations being admitted, the sex of the individual who so long acted the mother to the *fœtus* in question, becomes altogether indifferent. The *fœtus* has progressed, but as extra-uterine conceptions do. In fact, to whatever part the fecundated germs are attached, their mode of nutrition is the same. They derive from all, by means of proper vessels, the nutritive fluids they require. They are developed, and increase in size, until the time ordained by nature for their expulsion, and if they cannot then be expelled, they putrefy and turn into adipocire; they dry and become ossified, or else they vegetate until their presence, by irritating the adjoining parts, determines

the formation of abscesses, and procures their discharge. Such is what seems to have happened in the case before us.

To ascertain the degree of importance of this phenomenon, its exact cause should first be known, and then this importance would be determined by the light thrown on the natural process, and occasional irregularities of the process of generation. However, putting these considerations aside, the case does not the less merit our attention, from its rarity and interesting phenomena."—*Lancet*.

On the different Sorts of Goitre.—Dr. Sacchi, the chief surgeon of the hospital at Treviglio, has written a very able memoir on this subject, in the December Number of the *Annali Universali*, from which we shall make a few extracts.

The first form, or species, is that wherein the gland is simply enlarged in volume, but not changed in structure; it has been called by some the fleshy goitre; Dr. S. prefers the term of hypertrophy of the thyroid gland. It is common in young girls and in women, has a regular, even surface, an uniform resistance, and seldom presents any distinct divisions, or lobes.

It may be often cured by medical treatment. If not dispersed, the gland becomes in time variously altered: these alterations may be reduced to two leading forms; in the one, the goitre assumes a scrofulous character; in the other, an encysted, or, as it has been called, a lymphatic character. The scrofulous goitre attains often an immense size, but does not give rise to corresponding inconvenience or danger; it is generally lobulated. Now, in course of time, one or more of these lobes may become soft, and give to the finger the feeling of fluctuation; this constitutes the soft, hydatidic, serous, or lymphatic goitre of authors; the structure has become vesicular, and the contained fluid is sometimes watery, at other times mucous or albuminous, like the white of an egg. In a few cases it is more like milk or pus, or different cells may contain different sorts of fluid. It must, however, be well remembered that some goitres, which have a most distinct fluctuation, yet contain no fluid; the structure of the gland has degenerated into a mass like that of the placenta, or of a wet sponge.

This variety of goitre is remarkably smooth, uniform, and elastic to the touch. Some goitres undergo a partial ramollissement; for it is quite a mistake to suppose that they always become harder and harder, the longer they exist. From what has been stated, it may justly be concluded that hypertrophy, scrofulous change, and lymphatic degeneration, should be considered as three progressive stages of the same disease; and it is not unfrequent to find different parts of the gland simultaneously affected with these three diseased conditions.

It has been a subject of dispute, whether the thyroid gland is ever primarily affected with true scirrhus. Scarpa said *not*; and maintained that the disease was always consecutive to cancer or

scirrhus of the tongue, œsophagus, parotid, or submaxillary gland, &c.

Dr. Sacchi has, however, narrated a case in confirmation of the opposite opinion; and the dissection of the tumour must preclude any attempt to gainsay its nature. An example of genuine fungus hæmatodes is also detailed.

One of the most curious alterations of the thyroid gland is that which has been called the aneurismatic goitre; it is formed by an abnormal or excessive development of the thyroid arteries, and of their branches; the former sometimes acquire the size of one of the carotids. On examining the tumour during life, it is found to have strong pulsations at every point; but the pulsations do not resemble those of an aneurism, they convey to the hand rather a sensation of the blood flowing along very rapidly into numerous vessels, and are accompanied with a sound like an obscure buzzing, or tremulous murmur of the whole surface; but this is more distinct and strong over the site of the thyroid trunks. In two cases given by our author, the tumours had existed for a number of years, and both had been originally brought on by the efforts of the women during their accouchements.

In addition to the preceding forms of goitre, we may state, that the thyroid is occasionally the seat of tuberculous and melanotic depositions, and of hydatidic, atheromatous, cartilaginous, bony, and even of chalky formations. Now all these, as well as the preceding tumours, are included in the general appellation of goitre. Dr. S. adheres to the old opinion that this disease is very frequently, perhaps most commonly, induced by the prolonged use of unwholesome calcareous waters. In proof of this he alludes to the sanative results of changing the residence of the patients. This, he says, is by far the most important of all remedial means. Iodine is useful chiefly in the hypertrophic and scrofulous forms; less so in the lymphatic; and is quite inefficacious against the small, isolated and hard goitres. The best mode of using it is by friction, with an ointment of hydriodate of potass, to be continued for one or for several months.—*Medico-Chirurgical Review*, October, 1833.

Clinical Observations, by Dr. Steinmetz of Pymont.—1. *Croup.*—The inefficacy of the ordinary treatment by leeches and calomel, induced Dr. S. to trust almost entirely to the steady employment of emetics. The usual formula he has used is three grains of emetic tartar dissolved in an ounce of water, to be sweetened with sugar. A dessert spoonful may be given at first, and then every five minutes a tea spoonful, until very free vomiting be induced. He has sometimes added three grains of sulphate of copper, in cases which required immediate relief. The nausea and occasional retching should be kept up till the danger be over.

The success which Dr. S. has derived from this treatment is stated to be very gratifying.

2. *Excision of the Clavicle*.—A man, aged 31, had been afflicted with scrofulous tumours and abscesses for many years. One of these had formed over the right clavicle, and when it broke, the bone was discovered to be extensively carious. The patient's health becoming gradually more and more infirm, and the local malady not improving, it was determined to extirpate the diseased clavicle.

This was easily done by a cautious dissection. Although very little blood was lost, the patient was exceedingly exhausted and required active stimulants to restore him. The wound was quite closed in seven weeks, and the use of the arm was eventually little impaired. In the place of the removed clavicle, a firm cartilaginous deposit had been formed: it was flattened at its sternal, and more rounded at its acromial extremity; and here a few long nuclei were observed upon dissection, the patient having died of consumption four or five years after the operation.

3. *Morbus Coxarius—Guinea-worm about the Hip-joint*.—A coachman having injured his hip against the shaft of a carriage, continued to suffer at first stiffness and then severe pain in the joint for a length of time. In spite of all the means used, several abscesses formed in the neighbourhood; the general health decayed, and the patient was afflicted with severe attacks of tetanic convulsions.

One day, the surgeon, when he was pressing out the matter from one of the abscesses, observed a foreign body, like a dirty grey string or filament in the wound: upon touching it, it drew back, so as almost to be concealed. By cautious pulling, the surgeon coiled out two inches and a half of this worm-like body, and secured it round a probe to prevent its retreat. Six hours afterwards he drew out the worm entirely: it measured three-fourths of an ell, was of a dirty white colour, of the thickness of a small quill or of an earth worm, not annulated, but uniform throughout; the tail ended in a blunt point. The mouth and intestinal canal were quite obvious. It died very soon after being extracted. The patient speedily recovered, and ultimately was restored to perfect health.

4. *Monstrosity—Absence of the External Ears*.—In a child a year and a half old, observed by Dr. S., there was a total want of the external ears, except two or three small cuticular elevations, not provided with cartilage, which perhaps may be regarded as imperfect lobuli, although situated higher on the side of the head than the corresponding parts of a normal ear. The sense of hearing did not, however, seem to be impaired. Was this effected through the Eustachian tube, or in consequence of the external skin acting the part of the membrana tympani?—*Ibid.*

Medical Galvanism.—M. Palabrat has been engaged for some time past in endeavours to discover the most convenient method of introducing remedial substances into any part of the body, by means of a galvanic current.

That this can be effected is easily shewn by employing such che-

mical agents as exert a visible and easily obvious reaction upon each other; thus, if we lay a compress well wetted with the hydriodate of potass upon one arm, and upon the other a solution of starch, a fine violet colour is immediately manifested upon establishing the circuit; if iodine be used, instead of the hydriodate, it is speedily found deposited upon the starch. It may be said that the substance which is thus invisibly transmitted from one part of the body to another, follows the surface of the skin, and is not conveyed directly through the interjacent textures, which are the moist conductors and firm part of the galvanic arc. M. P. is of a different opinion, and rests it on some experiments, in which he not only well dried the skin of the arms, but covered a part of it with a gum-lac varnish; and yet there was not any interruption to the galvanic phenomena. By proper management, the medicinal substance which we wish to be transmitted, may be caused either to remain in the body of the patient, or to be withdrawn from it. If we desire the former it will be necessary to employ acupuncture at the same time.

M. P. assures us that he has met with very satisfactory success in the treatment of some cases which had resisted all ordinary remedies; he mentions particularly a case of enormous sarcocoele, and one of obstinate quartan fever. In the former, iodine was passed through the tumour; in the latter, quinine was introduced into the system.

The memoir was intrusted to MM. Majendie, Becquerel, and Savart, who are to report upon it.—*Ibid.*

Poisoning by the Fumes of Arsenic.—A man, who was a manufacturer of the blue pigment used in painting china, and his servant were engaged in boiling a mixture of nitric acid, of cobalt, and of arsenic. All of a sudden the matrass burst with an explosion, and the room was filled with the fumes. The servant leaped out at the window, and thus saved himself; his master was less fortunate—he was knocked down, and found himself incapable of rising; he lay on the floor, till his servant returned by the door to drag him out. After eight days' most severe suffering he died; his body had become enormously swollen. This was the case with the servant also, but in a less degree; in the course of forty-eight hours the abdomen was as large as that of a woman at the full period of pregnancy. He was taken into the Hôtel Dieu, and derived much relief from purgatives and baths. On the third day after his admission, he passed a quantity of fetid gas from the bowels, and experienced immediate comfort. The tympanites was gone, and he left the hospital well.—*Ibid.*

On Pellagra.—Some years ago, the Austrian government submitted certain questions to the professors of the University of Pavia, respecting that endemic disease of Italy, which of late has so much attracted medical attention; and required of them answers to each individually. Drs. Hildenbrande and Chiappa were selected to draw up the report. We must confine ourselves at present to the subject

of the fifth query—"What are the best means to eradicate the disease; or, if that be not possible, to check at least its progress?" The following schedule of propositions was drawn up in reply:—

1. To institute medical commissions or inspectorships, in the different departments of the kingdom of Lombardy.

2. The inspectors to visit, at stated periods, every house in their district, and to report to the comptrollers all cases as they occur. The most proper periods for such visits are the months of April and of September, as the disease generally commences, or at least is much aggravated in spring, and abates in Autumn.

3. Suitable hospitals, or "*maisons de santé*," should be appointed to receive the cases of pellagra as they are discovered. This advice is given, not from any dread of infection, but in order that the patients, who are always the poor and wretched, may at once be supplied with plenty of wholesome food, and not exposed to the scorching rage of the summer sun. It is remarked that the disease seldom affects the lower classes of workmen and artisans in cities and towns, even although their food be scanty and not of the best quality; and this is attributed to their labour being not so fatiguing, and being carried on within doors. Besides, when they are ill, there are the hospitals for them to go to. The poor peasants have none of these conveniences. They toil like beasts of burden, and are worse fed than they are; and, even in sickness, there is no relief provided for them. Thus, when once they become pellagrous, they seldom recover, unless removed to some city hospital.

4. A simply-written and judicious tract, describing the most approved method of counteracting the disease, and of treating its early stages, ought to be freely distributed among the lower orders.

5. Baths should be fitted up at the public expense, and the lower classes induced to bathe regularly when the slightest symptom of pellagra makes its appearance.

6. Marriages among pellagrous persons should be forbidden. Unfortunately for the efficacy of this enactment, the disease, in most cases, does not attack the young, so much as those at and above thirty years of age.

7. It would be well that public or government bakehouses were established, to secure a supply of wholesome and well-fermented bread for the peasants.

8. The cultivation of wheat, barley, and rye ought to be encouraged, in preference to that of maize or Indian corn (*grano turco*), which, at the present time, is far too exclusively used by the poor in Italy. The bread made of it is indigestible, ill-fermented, and not nearly so nutritious as that from other grains.

9. The cultivation of the vine ought to be encouraged every where.

10. The education of the lower orders in moral, religious, and in general knowledge, ought to be forthwith commenced and zealously pursued.

The general condition, in respect of domestic comforts, might, by wholesome legislative enactments, be materially improved. Agriculture and most manufactures are susceptible of many beneficial changes. The squalid and damp huts of the country people might be converted into clean and pleasant dwellings; their clothing might be made better; and their food more nutritious. Dr. Chiappa strongly and unhesitatingly affirms that the disease is much less dependent upon any local insalubrity of position, than has been generally supposed. No doubt this evil may materially aggravate the calamity, but it does not of itself induce it, and is therefore only of secondary influence. The root of the mischief is to be found in the misery of a scanty and unwholesome vegetable diet, and of hard toil in a burning climate. Let but the landlords be benevolent and humane, and we shall see much less pellagra in future. The work of the peasants in the fields, especially in the spring, when the hot weather sets in, should not be excessive, and not during the sultriness of noon. The morning and evening hours ought to be chosen. If we attend minutely to the symptomatology of the disease, we notice that the skin is first of all affected, then the mucous membranes, especially of the mouth, throat, œsophagus, stomach and intestinal tube: and lastly the whole nervous system.—*Ibid.*

Tonospasmia, a new Nervous Disease.—Dr. Semola, of Naples, has recently published an account of a very singular spasmodic disease, which he observed in the hospital of incurables there. It occurred in a young man of apparently healthy constitution. As long as he remained quiet, without speaking, there seemed nothing the matter with him; but no sooner had he uttered any sound, than he was forthwith seized with violent general convulsions; this dependence of the spasms on the voice induced Dr. S. to designate the disease "*tonospasmia*."

If the patient persisted to speak or to cry out, the spasms continued; and, if he ceased, they ceased also, leaving him perfectly well. The muscles chiefly affected were the extensors of the neck, trunk, and extremities; and the character of the spasmodic movements was, that the legs and arms, after frequent and irregular involuntary convulsions, were suddenly extended; the legs being at the same time brought in contact with and pressed against each other, and the arms forcibly applied to the side. The author compares them to the movements of a frog when submitted to the galvanic action. The malady was only of three days' duration when Dr. S. saw the patient; and his health was so good, that he was able to follow his occupation of a porter, provided always that he remained quite taciturn.

Fear seemed to be an occasional exciting cause of the convulsions. The proximate cause Dr. S. supposed to be a "hypersthénia, or irritation of that part of the mesocephalon, from which the extreme roots of the recurrent nerves are given off, in company with the nerves

of motion," producing an irresistible association, or sympathy between the muscular movements on which the voice depends, and the general convulsions of the body. His prognosis was therefore favourable; and the treatment which he adopted was depletory; viz. bleeding from the arm, and the application of leeches to the mastoid processes. The patient was very speedily quite cured.—*Ib.*

Case of an Encysted Abscess of the Cerebellum communicating outwardly.—The following very curious case, related by Dr. Scalvanti, of Pisa, is an interesting contribution to the pathology of the brain.

A soldier, aged 23, of a plethoric and healthy constitution, was admitted into the Royal Hospital of Santa Chiara, with the following symptoms, which had suddenly come on; active pyrexia, severe headach, stupor, hard, vibrating pulse, &c. The left parotid was swollen and inflamed. Active depletions speedily restored him; and all that he now complained of was a pain deep-seated in the left ear, accompanied with tinnitus. Blisters and other topical means were tried, but to no purpose; he therefore left the hospital, but soon returned; and now, in addition to the otalgia, there was a swelling of the meatus externus, and he was tormented with headach. By cupping, antimonial ointment, &c., he was relieved, and enjoyed a respite for several days; but it was only a respite, for again came back all his distresses worse than ever; the headach was accompanied with violent pulsations and a feeling of burning heat; the patient was feverish and watchful, and the integuments over the squamous bone were puffy and inflamed; leeches were applied to the inside of the nostril, with considerable benefit; still there was the beating pain in the head, which at stated periods became much exacerbated. For about six days he was tolerably easy, but this deceitful calm was soon followed by another attack of suffering; the swelling of the integuments had now increased, and pressing them with the finger caused pain, and left a pit.

These alternations of suffering and relief, the distressing headach, which never altogether left the poor patient, and the immunity of the intellectual faculties, led Dr. S. to predict disease of the cerebellum, according to the opinion announced by Lallemand in his *Anatomico-pathological Researches*. A doubt existed, whether the cerebellum was primarily diseased, or subsequently to a disease of the internal ear. However this might be, the man became worse; in spite of occasional intervals of a few days' ease, each attack was more severe and alarming; he became almost quite deaf and stupid, and the external swelling extended along the parietal and occipital bones. A surgeon who was called in consultation differed in opinion from Dr. S., and recommended an incision upon the mastoid process. He considered that the disease was altogether external, and that no suppuration of the cerebellum could have taken place, because there were no symptoms of compression, and the intellect was little impaired. He was not aware

of the results of Lallemand's researches. The incision was made, and the bone laid bare, but no appearance of disease was to be seen; the lips of the wound were however kept apart. The result seemed at first very gratifying; the headach and deafness were surprisingly relieved; and the external swelling much reduced. His physiognomy however became more stupid, and his speech betrayed a wavering state of mind. It is to be observed, that during the intervals of ease, his appetite was always vigorous; unfortunately for himself he on one occasion had indulged to excess; he was seized with obstinate vomiting, became paralytic, and died on the 29th of June.

Dissection.—On cutting down to the bone, the temporal muscle was found to be healthy; the pericranium was somewhat thickened, and a spoonful of pus was found underneath it, between the squamous and zygomatic portions of the os temporis; a hole penetrated right through the bone, just above the meatus auditorius externus, and over the phrenological organ of destructiveness. The membranes of the brain were highly injected; that portion of the left hemisphere, which occupies the middle and lateral fossa of the basis cranii, was very considerably increased in volume; the cerebral anfractuositities had disappeared, and the cerebral substance was unusually resistant and elastic; the dura mater was perforated opposite to the hole through the bone. Upon opening the lateral ventricles, it was observed that the left one was sensibly diminished in capacity; and right beneath it, a sac, or cavity of the size of a hen's egg was found; the medullary substance had been wasted away, so that the boundaries of the sac were formed by the cortical or grey portion; it terminated outwardly in a funnel-shaped prolongation, which communicated by the previously mentioned apertures through the dura mater and the bone, with the abscess under the pericranium. The walls of the sac had a fibrous appearance, and altogether resembled an inflamed mucous membrane. The rest of the encephalon was normal.—*Ibid.*

On the Position of the Embryo and Fœtus in the different Classes of Animals.—M. Dubois, in a late interesting article published in the memoirs of the Academy of Medicine, has very ingeniously shewn that the position of the fœtus, the head being always directed towards the os uteri, is quite independent of any influence of gravitation, and he has endeavoured to prove that it results from a sort of instinct of the little one to escape from its prison in the most easy and least dangerous way. He has examined the question, not only with reference to the human subject, but also to some of the other divisions of the mammalia; and the conclusion is surprisingly steady and uniform, that almost always the head of the fœtus is protruded first.

Not satisfied with these data, Mons. Virey has recently extended his inquiries to the other groupes of the animal scale, and has ably demonstrated that the same law seems to operate upon them. In all, or almost all, the direction and position of the fœtus are the same,

the head being born first. The frequency of irregularity in this respect is infinitely greater in the human than in any other species, and in civilized than in savage life. Hence it is that in our researches as to the laws of parturition, women is perhaps the very worst type, or standard of reference, which can be assumed. The extravagancies of fashion and custom, the pernicious effects of dress, the influence of the passions, and many other causes, operate upon her frame, but cannot affect that of the lower tribes. Nevertheless, even with her, the rarity of abnormal labour is very wonderful: in an overwhelming majority of cases, the foetus in utero is placed with its head to the vagina; and as it was known that the head was the heaviest part, the inference was very natural, that therefore it was dependent. Moreover it was found that if a mature infant was suspended by the umbilical cord, the head preponderated downwards; and this was long considered as an argumentum crucis in favour of the explanation given. Even in very modern books we find it stated, that, about the seventh month of pregnancy, the head of the foetus acquires such an increase of size, that the position becomes quite altered; that hitherto it had been uppermost, but that now it falls down, making a complete 'culbute' with its heels up. The objection to this statement was at once obvious; for how can this explanation, by change of relative gravity, be applied in the case of the lower mammiferous animals? In them, although the body of the mother is nearly horizontal, and the head of the foetus does not so much preponderate, yet the position of the latter is uniformly the same.

It is perhaps almost unnecessary to expose the fallacy of the experiment to which we have above alluded; viz. that of shewing the influence of the superior weight of the head, by suspending a foetus by the cord. Is not the cord in a multitude of cases coiled round the neck? and is not the placenta sometimes attached to the os uteri, and yet the head is dependent, although the point of suspension by the cord be thus altogether changed? The opinion of M. Dubois is, that the foetus is endowed with an instinctive and unconscious impulse to assume a particular direction, somewhat in the same manner as the magnetic needle mysteriously points to the poles. We cannot however admit the existence of such a blind, vague, and unintelligible agency;—instinct appears to have little or nothing to do with the phenomenon; and the only rational explanation is to refer it to an ultimate law of the living organism. Farther we cannot go. M. Virey assures us, that if we examine female quadrupeds at different periods of gestation, we shall always find the embryos and foetuses in the cavity of the horns, as well as in the body of the uterus, so placed, that the head is directed towards the vulva. Thus in a bitch, all the foetuses descending along the cornua or trumpets of the uterus, have their faces pointed to the vulva; one following the other in a row, like a pack of hounds upon one track. The exceptions to this arrangement are very rare. Let us now examine what is the case with the young of oviparous animals. One might naturally suppose that the spheroidal form of the egg rendered indifferent

any particular position of the contained foetus; but not so. At first the two chalazæ, which retain and fix the vitellus by its two poles, keep also the embryo in a uniform and definite position. The head of the chick is very generally turned towards the big end of the egg, which is here more fragile and more permeable to the air. It is this end which is usually directed to the oviduct, and which is first protruded from the cloaca; and as this holds equally with unimpregnated as with impregnated eggs, the conclusion is very obvious—that the position is by no means dependent upon any influence of the chick, but is rather the result of a simple original anatomical predisposition. M. Dutrochet, in his learned report to the institute, has these valuable remarks. In birds, the ovum in passing from the ovary into the oviduct, preserves a uniform position; the cicatricula, or embryotic germ, is placed equidistant from the two prolongations of the chalaziferous membrane, which the ovum receives in the oviduct; and always on the lightest, and therefore the most buoyant, and superior side of the vitellus, which is divided into two unequal longitudinal hemispheres, by the insertion of the chalazæ. This uniform and constant position of the ovum at its arrival in the oviduct attests a position equally uniform and constant, while it was yet in the ovary; the one is the consequence of the other.

Now the chick, whose embryotic lineaments exist in the cicatricula, having fixed and determinate connexions with the vitellus, it follows that during its development there will be a tendency to assume and to retain a definite position; and this position will be the same in all eggs. It is towards the big end of the egg that this direction of the chick tends; a direction which is evidently the necessary consequence of the original anatomical position of the yolk, or of the ovum in the ovary. The same reflections are applicable to the oviparous, ophidian, and saurian reptiles. M. Virey had lately an opportunity of ascertaining the accuracy of this in a female ‘*viperia aspis*.’ Upon opening the oviducts he found eight little vipers, already escaped from the shell; all of them were so placed that the heads were directed towards the vent. So much for birds and reptiles.

In fishes it has been repeatedly ascertained by observation, that the foetal embryo escapes with its head foremost. And if we examine the direction of the scales on the body of fishes and of reptiles, and of the feathers and hairs on foetal birds and mammifera, we shall find that they are uniformly directed from the head towards the tail when the animals are born. Had the feet of the young one been first expelled, the feathers and scales might have been brushed forward against their natural direction; and thus the escape from the shell might have been rendered difficult. Let us descend still lower in the scale of animals, and even in insects we shall find that the same law seems to be dominant. Every one knows that the larvæ escape head-foremost from the egg, and that the caterpillar eats through its silky envelope, and the crysalis through its shell. The disposition or arrangement of the covers is sometimes so adapted,

that the shells of several chrysalides open by a sort of lid at their anterior extremities. The only exception rests upon the authority of Bonnet; he says that the females of the aphid or plant-louse are born backwards "en reculons;" but that the males escape in the usual direction, that is, with the head first. This statement, although confirmed by the observations of Dutrochet, requires further examination, before we can admit its established accuracy.

Among the vermes, we may take the leech for an example; and in its case we know that the young animal escapes head-foremost from its envelope.

We have thus shewn how uniform and steady that law of parturition is, by which the embryo presents forwards or towards the light, its nervous cephalic pole, or extremity; whether the fœtal envelopes are naturally thinner and more delicate at that part where the head lies, or whether the impulsive effort of growth, or the progressive movements of the fœtus, weaken the tunics of the egg there, we are not prepared to say; certain it is, that they rupture more easily at this point, for the exclusion of the fœtus, than at any other. Even in animals which are fissiparous, or which propagate by buds on the body of the mother (and these buds are to be considered as ova, generated and developed at the surface), the part which corresponds to the head invariably makes its appearance first; and if we pass in succession to the vegetable kingdom, a similar law seems uniformly to prevail. We may, therefore, assume that a universal law of organization, and not a result of gravitation, nor of an instinctive impulse of the fœtus, which arranges its position so that the head escapes first; and we must regard the phenomenon as one of those ultimate laws whose existence we may, and should ever, strive to ascertain, but whose cause or antecedent we know nothing about: such likewise is the law of the ascension of the plumule, and the descent of the radicle of an embryo plant. The fanciful speculation of M. Virey, that as the "nervous or exciting element proceeds from the male in copulation, the ova are so disposed that the anterior and superior region of the body, which is the depository of the nervous apparatus of the embryo, must be first exposed to the impregnating influence of the semen or pollen," need not detain us long to examine. It is much more philosophical to rest satisfied with the fact, than to pen such fantastic nonsense. How do we know that the semen of the male is the "nervous element?"

Conclusions. 1. That the embryo, while situated either in the ovary, or oviduct, or uterus, always presents, in its normal condition, the head foremost.

2. That this position is purely organic and primitive anterior to the vivification of the embryo.

3. That the position of the germ or plumule in a grain-seed is analogous, and is dependent upon a similar principle.

4. That the agency of gravitation, or of any impelling instinct cannot be admitted; as we have seen that the position of the unimpregnated ovum is the same as that of the impregnated one.

But although we exclude instinct in the present case, let not our readers suppose that we deny the existence of all instinctive impulse to the fœtus; on the contrary, we regard many of its spontaneous acts as evidences of such an agency; and one of the most convincing illustrations is, that of the young chick picking its shell with its beak, in order to make its escape. The seat of instinctive operations we consider to be the ganglionic apparatus of the trisplanchnic nerves, whereas the intellectual functions reside in, or are somehow mysteriously associated with the cerebral mass.—(Vide *Histoire des Mœurs, et de l'instinct des animaux*, 1821.)—*Ibid.*

Inoculation of Syphilis.—M. Ricord, as is very generally known, has been lately engaged in a course of experiments to ascertain the effect of inoculating with the matter of primary diseased secretions, as from chancres, buboes, and gonorrhœa; and also with the matter of secondary ulcers, as those on the tonsils, on the skin, and so forth.

The result of these trials confirms the old opinion, that the one set of discharges is contagious, and the other is not.

It is right to observe that the experiments were performed on the individuals themselves, who furnished the matter for inoculation. When the inoculation did succeed, a papula was first formed: this gradually became pustular, and in the course of a few days a scab or crust occupied the summit of each. Upon this falling off, an ulcer, having all the characters of a true chancre, was discovered.

When the virus of a gonorrhœa gave rise to these phenomena, M. Ricord is of opinion that there were cotemporaneous chancres, and that it was in reality, the discharge from them, and not the running from the uninjured mucous membrane that was at fault.—*Ibid.*

Open Foramen Ovale in an Adult.—A man was recently admitted into the Hospital Beaujon, and died there. He had complained of great weight in the head; round the lips and beneath the eyes there was a cyanotic tinge; the pulse was strong, hard, and regular; the impulse of the heart was moderately powerful; no unusual bruit could be heard, and the temperature of the body was unaffected.

Upon dissection, the foramen ovale was so open, that the point of a finger might be passed through it; and around this large opening there were several other small ones.—*Ibid.*

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PART I.
ORIGINAL COMMUNICATIONS.

ART. XVIII.—*Observations on the Treatment of Various Diseases.* By ROBERT J. GRAVES, M.D., M.R.I.A.,
King's Professor of the Institutes of Medicine.

(Continued from Vol. III. page 370.)

ON THE ACCUMULATION OF AIR IN THE CAVITY OF THE PLEURA,
AND IN THE PERITONEAL CAVITY, AND ON EMPHYSEMA AFTER
PROFUSE HEMORRHAGE.

THE following observations refer, and that very cursorily, to but three varieties of a numerous class of diseases connected with and depending on the morbid development of air in the human body. Since the publication of John Peter Frank's celebrated work *de Curandis Hominum Morbis*,* in the sixth book of which this subject has been treated at great length and with his usual ability, few authors appear to have studied this class of diseases with the attention it deserves; and yet the improvement lately made in our knowledge of the laws

* See also articles Emphysema and Pneumatose, Dictionnaire des Sciences Medicales.

which regulate the diffusion of gases and their transition or passage through the texture and membranes of the living body, and our more intimate acquaintance with the phenomena of healthy and diseased secretion, ought to enable pathologists of the present day to enlarge the limits of this important department of medical science.—Until this is done I most anxiously refer medical students to the excellent remarks of Frank already spoken of.

With regard to the sources by which *atmospheric air* may enter the human body they are various. It is not true as asserted by an anonymous person in the *Lancet* of October 19th, 1833, p. 19, “*that the texture of the tissues is air-tight as well as water-tight,*” for Mr. Dalton has demonstrated, in a paper published in the *Manchester Memoirs*, vol. v., that the whole substance of the body is pervious to air, and that a considerable portion of air constantly exists in the body during life subject to increase or diminution according to the pressure of the atmosphere, in the same manner as it exists in water.—It is this pressure of air in all our tissues which enables the animal body to resist the pressure of the external atmosphere, which varies in amount from 15 to 20 tons in a middle sized man, without being sensible of the whole or any part of this enormous and fluctuating pressure. The whole of Mr. Dalton’s *Memoir* should be carefully perused by any one intending to write a monograph on *Pneumatoxis*,* nor should the labours of the celebrated American philosopher Dr. Mitchell, or of Dr. Graham on the diffusion of gases be neglected.—With regard to the researches of Dr. Mitchell, it has been well observed by an able reviewer in the *American Journal of the Medical Sciences*, May, 1833, p. 194, “Reference to the above mentioned law and modifying agencies enables us to explain many phenomena hitherto imperfectly understood. * * * * It affords new views of the theory of respiration, and accounts in that process for

* The general term adopted by Frank to express “a morbid development of air in any part of the human body.”

some well ascertained facts for which there previously existed no adequate explanation. It shews us how emphysema and tympanitis may happen without secretion of gases, or lesion of tissue, and how a spontaneous cure may be produced. It leads to the probability of the existence of gaseous matters of very various kinds, in almost every part of the animal frame, resident there molecularly, and not *en masse*, but susceptible of being collected into the great cavities or the cells of the tissue or blood vessels by mechanical or electrical influence, or the attractive interstitial agency of other masses of air."

Not having time at present to enter further into the philosophy or general pathology of Pneumatosis, I shall content myself with bringing forward a few facts connected with this subject. And first with regard to the occurrence of a collection of air within the cavity of the pleural sac; in the latest publications the existence of such a disease as simple Pneumothorax is scarcely admitted. Thus in an article in the Cyclopædia of Practical Medicine, Doctor Houghton in speaking of Pneumothorax from gaseous secretion, says, "This variety has not been decidedly established by the observations of other pathologists since the time of Laennec, and we record its existence merely on his authority and on that of Andral, who relates a case of it, in which, however, this origin was not unquestionably proved."

On this point I may observe, that Laennec and Andral are not the only authorities which might be cited in the support of the existence of Pneumothorax from gaseous secretion, for Frank long ago described a case in which paracentesis of the chest was performed for the purpose of giving exit to a suspected accumulation of pus within the pleural cavity, and in which the operation gave vent to a large quantity of air; "*ne guttula quidem puris, sed aer cum strepitu prorupit.*" The patient perfectly recovered. There seems indeed to be no good reason why air should not occasionally collect in the cavity of the chest, as a consequence of a diseased secretion from the pleural serous membrane, as well as in the cavity of the peritoneum, in conse-

quence of a morbid secretion of air from the internal surface of the peritoneal serous membrane, an occurrence acknowledged to be very frequent. The following cases appear to establish the fact that there is such a disease as Pneumothorax, in which the air accumulated within the pleural sac is not derived from the external atmosphere through a fistulous opening communicating with the bronchial tubes, nor from decomposition of fluid effused in consequence of pleurisy into the cavity of the chest, but from the direct secretion of air from the pleural sac, in consequence of a low degree of inflammation affecting the serous membrane; Frank brings forward abundant and striking facts to prove that the subcutaneous cellular membrane, (a tissue the products of whose inflammation are identical with those of serous membranes,) may secrete air in abundance, and thus give rise to emphysema, when in a state of slight inflammation; there can be no difficulty therefore in conceiving a similar result from a certain degree of pleural inflammation.

I was called by Mr. Dwyer of Camden-street, to visit a young gentleman affected with cough, and mild feverish symptoms. Indubitable evidence was afforded by the stethoscope and percussion of a considerable portion of the lower lobe of the left lung being on the verge of hepatization, for there was dulness, bronchial respiration, and very obscure crepitus, with bronchophony over the affected infero-posterior portion of the lung. In no other part of the left lung whatsoever was there dulness; indeed the reverse was observable over its infero-anterior portion, which gave a preternaturally clear sound, particularly in the region usually occupied by the heart. It was evident that no effusion of fluid existed in addition to the pneumonia detected at the base of the left lung. On closer examination we were, therefore, greatly surprised at finding that the heart was pushed out of its place, and pulsated quite close to the mamma on the right side.

Had the heart been pushed *thus far out of its place* by fluid effused into the left pleural sac, it is clear that the fluid must

have been very considerable in quantity, and *must have necessarily filled the space usually occupied by the heart, as well as that through which the heart was forced* in pushing the mediastinum from the left to the right side. Obvious considerations make it impossible for the heart to be dislocated, as this young gentleman's was, so far to the right side by means of an effusion of fluid into the left pleural sac, without the occurrence of extensive dulness and the other physical signs of empyema in the infero-anterior portions of the left side of the thorax. No case of dislocation of the heart by means of fluid to such an extent has ever been recorded, without these signs being at the same time observed most extensively in the left side of the chest. In this case, however, the heart was dislocated as already described, and yet not a single physical sign of the presence of a fluid in the left side existed. Some who examined this case advanced the opinion, that the heart was dislocated by means of the stomach being distended with wind. The relative anatomical positions of the heart and stomach, render it actually impossible for the latter, even when distended to a maximum, to push the heart in the slightest degree towards the left side ;—indeed in the numerous distressing cases of ventricular and intestinal tympanitis which I have witnessed, even in those where the belly has been most inflated, I have never seen such an effect ; but it is unnecessary to controvert this opinion further, for in a day or two the belly became quite fallen and soft, while the heart's dislocation still continued. There is no other way then of accounting for the latter phenomenon, except the supposition that the heart was pushed out of its place by air effused into the left pleural sac, in consequence of a certain degree of pleurisy accompanying the pneumonia of the left lung. The physical signs such an occurrence must necessarily give rise to would perfectly agree with those observed. It is important to add, that the inflamed portion of the left lung now went through the usual process of healthy resolution, but that the heart had regained its natural position many days before the

resolution of the pneumonia was completed ; an occurrence we can readily explain on the natural supposition that the absorption of the effused air was a process more easily and readily performed by the pleura when its inflammation was cured, than was the restoration of the lung to its original healthy structure after the pneumonia had been checked.

The following case, communicated to me by Dr. Corrigan, affords a striking example of the secretion of air by the pleura :—

“ A man, admitted into one of the medical wards of Jervis-street Hospital, died soon after admission. I did not see him alive, and the only particulars of his case I could obtain, were, that he had complained, on admission, of great dyspnœa, and of stitch in his left side, for which he had been bled and blistered. The post mortem examination was made six hours after death. The body appeared to be that of a man of about forty years of age, well formed and well nourished. The muscles at the time of examination were becoming very rigid, and the superficial veins all over the body, but particularly those of the upper extremities, were remarkably distended. On percussion the anterior part of the thorax of the left side sounded very clear—the right side comparatively dull. The right lung fully occupied its side, and was kept in its place by a few old adhesions ; in the cavity of the pleura was a small quantity of reddish coloured serum ; no deposition of lymph or other evidence of pleural inflammation. The texture of the lung was a little more gorged than natural. On opening the left side of the thorax, which, as already noticed, sounded clear on percussion, the lung of that side was found collapsed, lying close to the spine, its texture when cut into, of a dark venous colour, completely carnified, without the slightest crepitation or approach towards hepatization in any part of it. Two or three old loose bands of false membranes passed from the top of this lung to the upper part of the pleura costalis. In the cavity of the pleura were six or eight ounces of reddish serum, and the an-

terior inferior part of the surface of the collapsed lung was covered with a pasty exudation of lymph to the thickness of the one-sixth of an inch, which could be easily pulled off, leaving the pleura underneath smooth and transparent. This deposition was evidently of very recent formation. In the upper part of the collapsed lung was a cavity of the size of a walnut, with a partially formed lining of lymph. No tubercular matter was found around it or in any other part of the lung. The clear sound on percussion, the collapsed and carnified state of the lung in this case shewed that the cavity of the pleura had been distended air, which exerted a compressing power on the lung, but whether the air was a secretion from the vessels engaged in the inflammatory action of the pleura, or whether it passed from the cavity in the top of the lung, is a question not so easily answered. The probability seems to be that the air was a secretion. No communication could be detected between the cavity in the lung and the cavity of the pleura, and there was a considerable depth of pulmonary tissue between them. There was moreover no purulent fluid in the cavity of the pleura, nor any recent lymph shed in the neighbourhood, both of which we might expect if the pleura had been ruptured."

Although Dr. Corrigan has expressed himself doubtfully concerning the source from which the air found in the pleural cavity was derived, yet the fact of there being no communication between the cavity of the lung and the cavity of the pleura appears quite decisive of the question. It is clear from comparing this case with that related by Laennec, that the latter would have considered Dr. Corrigan's case as a complete and perfect proof of the secretion of air by the pleura.—The fact too that this air had exerted on the lung itself a compressing force sufficient to carnify that viscus, *is in itself a demonstration* that it had no communication with the air contained in the pulmonary structure and in the bronchial tubes. It is indeed self-evident, that air derived from a pulmonary abscess communicating with the pleural sac, being in equilibrium with the air con-

tained in the lung itself, could not possibly expel the air contained in the air cells, a step necessary to be effected prior to carnification of the lung. The result of this dissection, therefore, together with the case I observed along with Mr. Dwyer, added to the evidence of Andral, Laennec, Frank, and others upon the subject, leaves no doubt whatsoever of the existence of such a disease as Pneumothorax from gaseous secretion.

X The next species of Pneumatosis to be considered is the abdominal, of which there are two varieties, the intestinal, where the accumulation of gas takes place within the alimentary canal, and the peritoneal, where it occurs in the peritoneal sac. Frank's observations on this subject are extremely interesting, but do not point out any clear mode of distinguishing these varieties from each other.* It must be confessed, indeed, that they both occur together in some cases, and then the diagnosis is of course impossible; in general, however, *particularly when chronic*, the peritoneal pneumatosis, or tympanitis, may be distinguished with sufficient accuracy. In this variety of the disease the general health is often unaffected, the appetite good, the bowels regular, and the patient does not complain of flatulence, borborygmi, or colicky pains. The shape of the belly too in peritoneal tympanitis is more prominent and globular than in the intestinal, and in appearance more closely resembles the abdomen of a woman far advanced in pregnancy. The latter circumstance indeed often constitutes the sole annoyance complained of by the patients, who are generally young unmarried females; as a contribution to the diagnosis between chronic intestinal and peritoneal tympanitis, I may observe, that in the latter change of posture always produces a change in the situation of the most sonorous part of the belly, which always occupies the most elevated part; this to a certain extent likewise takes place in intestinal tympanitis, but not in so remarkable a manner as in the peritoneal. Thus in the case of Mary Callaghan,

* See also Dr. Elliotson's observations on the same subject in his lectures as reported in the Medical Gazette.

aged 15, admitted into Sir P. Dun's Hospital, in April, 1833, there was no derangement of the general health, her appetite was good, tongue clean, and she was not at all annoyed by borborygmi or flatus in stomach or intestines: bowels were regular; all this was inconsistent with intestinal tympanites; her abdomen was globular and measured 31 inches round the umbilicus, which, considering her age and slender make, argued a great increase in size. When she lay on her back, the anterior and antero-lateral portions sounded clear, the postero-lateral portions dull. When she lay on one side, the opposite side of belly then sounded clear. This peritoneal tympanites *had gradually attained to its present magnitude during the preceding year.* It did not affect her respiration: there was no œdema of the extremities, and the abdominal tumefaction was not subject to temporary alterations in size either from eating any particular article of food or any other cause. I have seen several cases similar to this, unaccompanied by menstrual derangement, and where the unseemly appearance of pregnancy was the cause of much annoyance. I must confess that all the remedies I have tried in such cases have generally failed altogether, although the greatest diligence was used in applying stimulating and carminative liniments, bandages round the belly, &c. &c. In such cases I have administered, without good effects, spirit of turpentine by the mouth and in injections, iron, bark, iodine, diuretics, and a continued course of smart purgatives, together with the tepid saltwater shower bath, but have not found any of these means useful,—for the disease has resisted them all, and continued month after month unabated. It is with a view, therefore, of eliciting further information on this subject that I have made the foregoing observations, for although the disease in question is often quite unattended with any feeling of abdominal tenderness, or indeed any symptom of deranged health, yet the females so affected, and their friends, look for its cure with anxiety, and naturally become impatient when they find the size of the abdomen undiminished, notwithstanding

ing the application of various remedies. When peritoneal tympanites arises very suddenly, in the course of a few hours, or of a few days, the prognosis is much better, and we have a much less obstinate disease to contend with, as it seldom continues long, and often disappears as suddenly as it came. This tractable variety occurs not merely in unmarried hysterical females, but also very frequently in women shortly after delivery. The chronic peritoneal tympanites is of common occurrence in charitable institutions devoted to the education and support of young females, and then it seems connected in most instances with a scrofulous diathesis, produced by confinement and an exclusively vegetable diet.

The peritoneal tympanites may occur as an acute disease arising from peritoneal inflammation, and complicated with intestinal tympanites, and then it is not rare to see the intestinal tympanites disappear when the inflammatory symptoms have been overcome, while the peritoneal tympanites continues for a long time unabated, without, however, producing any inconvenience but that arising from a certain feeling of distention it produces. A succession of blisters and mercurial ointment appeared useful in such cases.

In the preceding observations I have passed by without notice the common and well understood form of intestinal tympanites met with every day in hysterical females, and giving rise to abdominal tumefaction, sometimes confined to one portion of the alimentary canal, and sometimes apparently extending over its whole extent; a form of tympanites often as remarkable for the suddenness of its disappearance as for the multiplicity of hysterical symptoms by which it is usually accompanied.

I have already adverted to the occasional occurrence of spontaneous emphysema seated in the subcutaneous cellular tissue; I have nothing to add to the full and beautiful description given by Frank of this, except the following remarks on that variety of the disease which sometimes follows great

loss of blood. In the *Gazette Medicale*, tom. iii., No. 103, is a very interesting memoir by M. E. Rebolle de Gex, on *A New Species of Emphysema, developed after abundant Hemorrhage*. In one patient, named Ducret, who died in the Hôtel Dieu of repeated attacks of profuse epistaxis, and whose body was examined fifteen hours after death, before the least symptom of putrefaction had commenced, the coagulated blood found in the heart and large vessels contained numerous small cells filled with air, and, in fact, was emphysematous. The large vessels contained many small bubbles of air, but this phenomenon was still more striking in the smaller veins, where it resembled the contents of a spirit of wine thermometer into which bubble after bubble of air had been introduced. When the vessels were divided gas escaped with the blood.

Another case, related by the same author, and several experiments on animals which he instituted, leave no doubt of the fact, that gas exists in the circulating system after profuse hemorrhage. I do not know when I was more pleased than on happening to meet with Rebolle de Gex's memoir, for a case precisely similar to those he has related occurred in my own practice last spring, at which time I had never heard of any facts analogous to what I then observed, and I was consequently much embarrassed in endeavouring to account for it. A gentleman, about fifty-six years of age, residing in the neighbourhood of Dublin, was attacked with excitement of the vascular system and a quick thrilling state of the pulse, which ended in repeated attacks of profuse epistaxis. This hemorrhagic tendency was probably connected with hypertrophy of the heart, and had produced an extreme degree of debility, when Mr. Kirby, who was in attendance with me, discovered that the subcutaneous cellular membrane of the abdomen had become emphysematous. Neither Mr. Kirby, nor Dr. Jacob, who was attending along with us, was aware that this emphysematous state arose from the preceding hemorrhage. Every thing connected

with the development of gas in the vascular system is calculated to excite interest, and without entering upon the important inquiry how it happens that hemorrhage predisposes to such an occurrence, I may observe, that when air is once generated in morbid quantity it may occasion the most fatal symptoms, as is proved by the sudden deaths which have occurred during operations, in consequence of the absorption of air into the veins. Morgagni long ago expressed an opinion, that certain apoplexies depend on a morbid effusion of air within the cranium, and cites the authority of Hippocrates in support of this hypothesis. Valsalva mentions that he once found the heart and the veins distended with gas; Grotz witnessed the same in a woman who died of suffocation, and Ruysch reports a similar phenomenon which occurred in a case of sudden death;* but of the facts hitherto recorded, those observed by Rebolle de Gex, and by M. Bally, are the most remarkable, and well deserve the attention of pathologists, particularly of those physicians who have explained spontaneous combustion, on the hypothesis of an inflammable gas being in some cases developed in the cellular tissue. In the cases detailed by both these authors, on cutting the emphysematous parts, a gas escaped which ignited on the contact of the flame of a candle;† and in Rebolle de Gex's case, even the muscles were affected: for he says, that when the muscles were pressed before the light there was a sparkling and cracking like that which is produced by squeezing out the essential oil from an orange peel before a taper. As the morbid development of gas in this case was a *consequence of profuse hemorrhage following an operation*, it more especially deserves the notice of every practical surgeon.

* The latter citations are from the *Medico-Chirurgical Review*, edited by Dr. Johnson.

† Bally's case, which occurred in the Hotel Dieu, was not preceded by hemorrhage. It is noticed by Dr. Apjohn, in an able article on Spontaneous Combustion, in the *Cyclopædia of Practical Medicine*.

CONVERSION OF THE WHOLE RIGHT LUNG INTO AN ENCEPHALOID
OR BRAIN-LIKE STRUCTURE.

Rare diseases should not be looked upon as mere matters of curiosity, but should be attentively studied with the view of enabling us to recognize the true nature of similar cases when they again occur. Were the history of diseases, at present reputed to be extremely uncommon, published by all those who meet with them, facts, now apparently single and insulated, would serve as *nuclei* round which future experience and observation might cluster together similar facts in groups sufficiently numerous to illustrate and explain each other. The diagnosis of encephaloid tumors of the lungs was, a few years ago, completely impossible; but I trust that ere long we may be enabled to arrive at some degree of certainty even in this difficult and obscure branch of thoracic pathology. The wish to promote so desirable an object, has induced me to publish the details of the following case, chiefly valuable on account of the accuracy with which the symptoms were observed during life.

John Keating, aged thirty-six, of a muscular form, a printer, admitted on the 1st of May, 1833, into the Meath Hospital, which he had left in the beginning of April, having then been in it nearly two months. He dates his illness from the summer of 1832, at which time he became subject to occasional pains in the right side of his chest, increased by deep inspiration. Last November he was attacked with cough, dyspnoea, hoarseness, slight expectoration, at first mucous, afterwards a little tinged with blood, and constipation of bowels. In a short time he observed also, some œdema of the face and neck, rather greater on the right side, and on rising in the morning. This illness he attributed to over exertion, want of rest, and cold caught by handling damp paper. The symptoms were a little relieved by venesection and a cough mixture. The attack, however, recurring, he came into the Meath Hospital in the month of February last, labouring under symptoms less urgent but of the same character with those detailed below on his se-

cond admission. He was treated by Dr. Stokes with venesection, moderate mercurialization, repeated blisters, &c., and went out slightly improved about the beginning of April. Being still, however, unable to work, and finding his symptoms returning with increased violence, he again came to hospital, and was placed under my care, the 1st May. His chief distress arose from excessive dyspnœa almost amounting to orthopnœa; when he lay down the only position in which he could breathe tolerably was on the right side. After a few weeks he found it impossible even to do this, and for eighteen or twenty days before his death he sat in his bed night and day, leaning forward as far as possible, and supporting his head by means of a pillow placed on his knees. A state more piteous could scarcely be imagined. When admitted his dyspnœa was increased by the least exertion, which brought on palpitations of the heart. He had a dry cough, with occasional scanty expectoration slightly tinged with blood; no pain in chest, with the exception of slight stitches on making a full inspiration. He experienced some difficulty of swallowing, and referred the cause of obstruction to the lower part of the throat. There is no soreness in any part of the chest, but he complains of some pain about the right shoulder. His face is bloated, pale, and looks as if it were slightly œdematous; this, together with a certain appearance of the eyes as if the balls were somewhat protruded from the sockets, and a marked dilatation of the nostrils during breathing, gives his countenance an expression of distress and suffering. The right jugular vein was much distended, as were the veins in the right axilla, but this symptom was chiefly remarkable on the surface of the belly, where two veins corresponding to the situation of the superior epigastric artery pursued a remarkably tortuous course along each side of the linea alba, being turgid and dilated to the size of swans' quills.*

* This circumstance indicating some obstruction at the right side of the heart, I then considered as affording indubitable evidence of disease of the heart itself.

His bowels were constipated, and subject to griping pains. Urine scanty and high coloured ; loss of appetite ; night sweats ; slight thirst, tongue clean, pulse 100, regular, and compressible.

Examination of chest.—The intercostal spaces on the left side, are more distinct, deeper, and more dilated in respiration, than those on the right ; the latter, however, although not so well marked, are by no means obliterated or distended by pressure from within. The right side of the chest measured about half an inch less than the left.

Percussion.—Left side anteriorly, a clear sound everywhere, until we came within an inch of the sternal median line, where it became dull. Posteriorly, every where a clear sound. Right side, universally over every part, as dull as possible.

Respiration.—Puerile over the whole of left side, except on approaching the sternal median line, where it assumes a tracheal character. This tracheal respiration is observed over a great part of the anterior part of the right side, where it is very loud and distinct above the mamma, feebler immediately below it, and is almost entirely lost still lower. On the posterior part of the right side, the loudness and tone of the respiration are not, by any means, so decidedly tracheal as anteriorly ; to some, the sound heard appears to be more allied to bronchial respira-

The dissection proved that the cause lay not in the heart, but in the impervious state of the right lung, in consequence of which, the black blood had its exit from the right side impeded, none, or nearly none, passing through the pulmonary artery to the right lung. In truth engorgement of the venous system, although it may indicate an obstruction somewhere in the central portion of the system of black blood, yet it by no means points out the exact seat of that obstruction ; the obstruction may occasionally be even on the left side of the heart. With regard to the serpentine course of the abdominal veins above described, I find several such cases recorded, particularly one by Dr. Wright of Baltimore, in his contributions to cardiac pathology, and one of a very remarkable nature by M. Renaud, in which the superficial veins of the abdominal parietes carried on a collateral circulation where the *vena cava* was obliterated.

tion, and it is certainly bronchial in one part, near the spine. No rales are audible in any part of the chest.

Voice.—At the upper and anterior part of the right side, the voice is resonant, approaching to, if not identical with bronchophony; elsewhere, nothing remarkable was observed with respect to the voice.

Heart.—Pulsates in its natural situation, but its sounds are heard over a great extent, being audible under both clavicles, and over the whole of the right side. Right side of chest, during respiration, obviously moves much less than the left, and when he speaks, the hand placed on it feels the vibrations caused by the voice to be feebler on the right side than on the left.

The physical phenomena here detailed, remained unvaried until his death, except that all traces of bronchial respiration soon disappeared from the right side of his chest, except at one spot near the spine, and where any thing was heard in other parts it was now evidently a tracheal wheezing which marked all other sounds.

When this patient entered the hospital, on the 1st May, the abdomen felt natural, and no enlargement of the liver could be felt, but after some time the liver appeared to have been rapidly altered, and could be distinctly felt far beyond its usual limits, and forming a hard visible tumor in the hypochondriac and epigastric regions. At the same time his stools became clay coloured, and he was jaundiced. The yellow colour, however, was not of a deep, but of a light lemon shade.

Another remarkable phenomenon developed itself before the termination of the disease; whenever he lay down, that instant a loud wheezing was heard in his chest, accompanied by a sensation of imminent suffocation; the dysphagia increased likewise, but was never very urgent. The want of breath, and a total want of sleep, with inability to lie down, and various symptoms of indigestion, reduced him to a most wretched state of suffering; his face and neck became daily more œdematous, and the eyelids transparent, and distended with yellow serum,

were swollen in such a manner, as nearly to close his eyes for many days, before death put an end to his sufferings, on the 15th of July, after a violent paroxysm of pain in the belly, to which he had latterly become subject.

Three tumors had been observed on his body, and they had latterly increased in size with great rapidity. They were immediately under the skin, (which was of the natural colour,) were smooth, of a round form, of the size of walnuts when observed on the first of May, but now are very nearly as large as oranges. They were slightly moveable at first, more fixed afterwards, and never accompanied by the least pain or soreness: at first they felt solid, but afterwards more elastic, as if they were distended with fluid contained in a firm capsule; they occurred on the forehead, ramus of lower jaw, and near lumbar spinal processes.

Dissection.—*Chest.*—Left lung collapsed, perfectly healthy. Right lung, or rather the contents of the right side of the thorax, adhere every where to the parietes, by means of an intimate adhesion between pleura costalis and pulmonalis. The pleura is exceedingly thickened and dense. In place of the right lung was found a solid mass, weighing more than six pounds, with an irregular, somewhat modulated surface; this mass filled completely the right cavity, but did not protrude between the ribs, so as to distend, notably, the intercostal spaces; it encroached, however, upon the other side of the chest, extending a little beyond the median line, enveloping, and nearly concealing from view, the pericardium, great vessels, and trachea. This solid mass was removed with difficulty on account of the adhesions, and was found to present, over a small portion of its posterior surface, a thin stratum of lung, nearly impervious to the air. The solid mass was found to be everywhere homogeneous, firm, of a white colour slightly stained with bile, and tolerably firm and consistent in its structure, which resembled a brain partly hardened by artificial means. When cut, each section exhibited an oozing of the softer brain-like fluid mass

from the exposed surfaces, which oozing was much increased by pressure ; so much indeed, that it was obvious that the soft cerebriform matter, bore a large proportion to the cellular and other structures in which it was lodged, and upon which the firmness and apparent solidity of the whole depended. The mass was somewhat lobulated posteriorly, and contained a few small cysts filled with a jaundiced serum. The right bronchial tube could be traced for a short distance into the substance of the mass but was considerably diminished in calibre ; the heart was pale, and rather atrophied ; its great vessels seemed to run through the substance of the mass which surrounded the bases of the heart, so that only its lower part was visible.

Contrary to expectation, the liver was found perfectly natural in size, but the gall bladder was enormously distended with bile, and was at least three times its natural size. The apparent tumefaction of the liver was owing to its being depressed by the thoracic tumor. A tumor, consisting of several smaller ones, occupied the situation of some of the mesenteric glands, and equalled two fists in size. It consisted of the same cerebriform substance as that observed in the chest, and appeared to have arisen from degeneration of the mesenteric glands. This tumor pushing the transverse arch of the colon upwards, and the small intestines downwards, pressed upon the ductus communis choledochus, so as to prevent altogether the passage of bile into the duodenum, while its lateral portions extending to the kidneys pressed upon these organs. The substance of the liver was healthy but green, being injected with bile.

Such are the most important particulars of this remarkable case, which, during the patient's life, proved an opprobrium to the science of diagnosis, for it is scarcely necessary to observe, that both myself and colleague were completely mistaken as to its nature. I forgot to mention, that in addition to the other symptoms of a moribund state of the heart's action, a very loud *bruit de soufflet* was at times observed, chiefly at the right side of the heart. Aneurism, circumscribed pleuritic effusion, and enlargement of the heart ; pleuropneumonia, pleurisy, and hepatization, in con-

sequence of previous pneumonia ; solidification from tubercles, &c. &c., were each successively advocated : as to myself, I became quite tired of the difficulty of attempting to explain the phenomena observed with any of the diseases I had originally fixed on as the causes of the symptoms ; and latterly, however erroneously positive I had been when I first took the man under my care, I gave up all further attempts at diagnosis ; and yet it seems strange that the external tumors did not awaken a suspicion of the true nature of the case, for although we were not permitted to examine them, their nature was certainly the same with the internal. The truth is, that these very tumors served only to mislead me still further, for I considered them as common scrofulous formations. At the present stage of our investigations on this subject, it is premature to attempt pointing out the true features, which may hereafter serve for making a correct diagnosis in similar cases ; some of these features are sufficiently obvious, but we must wait for additional facts, before the symptoms peculiar to this disease can be pointed out with accuracy.

A case of cerebriform tumor in the chest has been already described by Dr. Stokes and myself, in the fifth volume of the Dublin Hospital Reports, and another, the details of which I subjoin, have been communicated to me by my friend Dr. Houston. “ A rare specimen of diseased lung, presented to the museum of the Royal College of Surgeons by the late professor Todd, but of which no history was procured, as the individual, the subject of it, was in a dying state when brought into hospital. It was only learned that the disease had been the work of years ; that the individual who bore it had never been much affected with pain ; that the principal features of the complaint had been a continually increasing difficulty of breathing, and distressing dry cough, aggravated at times by exposure to cold, or attempts at hard labour ; and that the right side had been latterly observed to grow larger than the left : the patient was about 20 years of age.

On dissection, some hours after death, both lungs were

found much diseased, but the right was particularly altered in structure. Tumors of various sizes, from a pea to an orange, were interspersed every where throughout it in such masses, as to have caused the absorption of nearly the whole of the original structure. The larger bronchial tubes, some thin strata of vesicular lung among the less overgrown tumors, with a small part of the superior lobe, were the only traces left unchanged. The tumors were all encysted from the commencement ; they consisted of a glairy, thick material, of a white colour, like pus, supported in a fine cellular web, which grew from the inner surface of the cyst, and gave such a body to the tumor, that when cut into, it retained its form, and did not fall to pieces. From their first formation to their fullest growth, the tumors partook of the same characters ; the only perceptible difference between the very small and very large ones, lay in their greater tendency, as they grew big, to adhere and run into each other, and in the increasing proportion of fluid to solid parts. The fluid admitted of separation from the cellular basis, by friction or maceration in water. A preparation, made in this way, is preserved in the museum, shewing the cyst and cellular tissue of one of the tumors.

This diseased mass adhered firmly at every point to the parietes of the chest ; had even grown larger than the cavity in which it lay, had protruded the intercostal spaces, and pushed aside considerably the mediastinum and heart. The disease had made less progress in the left than in the right lung ; and in both, its advancement was greater in the lower than in the upper lobe."

I may conclude with observing, that one half of Keating's diseased lung is preserved in the museum of the College of Surgeons, and the other in the museum at Park-street.

ART. XIX.—*Contributions to Midwifery*. By THOMAS EDW. BEATTY, M. D., M. R. I. A., Professor of Medical Jurisprudence to the Royal College of Surgeons in Ireland, and Consulting Accoucheur to the Baggot-street Hospital, Dublin.

I. On the means of preventing Uterine Hemorrhage after Delivery.

II. Mammary Abscess.

III. *Secale cornutum*.

ON THE MEANS OF PREVENTING UTERINE HEMORRHAGE AFTER DELIVERY.

UTERINE hemorrhage, after delivery of the child, is one of the most formidable accidents that can befall a parturient woman. The immense quantity of blood that is sometimes thus lost in a single gush, is well calculated to strike terror into the boldest heart unaccustomed to witness this phenomenon. The loss sustained in the bloodiest operations of surgery shrinks into insignificance, when compared with the deluge thus poured out; and it is certainly wonderful that life is not even more frequently extinguished when this accident occurs. It would appear as if the constitution of the woman was better able to bear the sudden abstraction of a large quantity of the vital fluid, at this particular time, than at any other, probably in consequence of the habit so long maintained in the system, of devoting a large portion of it to the purposes of the fœtus, now expelled. The great number and size of the uterine vessels in the advanced stage of gestation, give lodgment to a corresponding quantity of blood, which, as far as the actual wants of the maternal system are concerned, must be considered as so much superadded to the mass of that fluid usually circulating in the body. We do not find that other parts of the system suffer materially in nutrition during the existence of pregnancy;

may, a general plethora is not an unfrequent concomitant of this state ; while we observe, what may be esteemed (in comparison with their former dimensions,) a new series of capacious vessels, filled with blood, destined for the support of a distinct being. The entire of the blood circulating in the uterine vessels at any given moment, may therefore be considered as an extra quantity, useless to the mother ; and it is perhaps not going too far to suppose, that if the arteries and veins of the uterus were suddenly obstructed at their entrance and exit, and the mass of blood contained in them thus cut off from the general circulation, the mother would not suffer any material inconvenience.

However this may be, it must have struck every practitioner in midwifery, that puerperal women bear uterine hemorrhage better than any other class of patients do an equal loss from any other source. But there is a limit beyond which this form of hemorrhage can not be borne ; differing certainly in different women ; some appearing to sink under a loss that will scarcely affect the pulse of others. What the amount of this quantity is in each individual, we can not previously determine ; neither can we always foretel when it is likely to occur, as some women, after having borne many children safely, will be attacked and carried off by this form of hemorrhage ; while others may have it once or twice, and afterwards pass through several succeeding labours without it. It therefore becomes the duty of every practitioner to be particularly watchful of this dangerous accident, and to treat every patient as if she was liable to its invasion. The means to be used may be unnecessary for many, but can be injurious to none, and if one patient out of a thousand is saved by their employment, it is a sufficient reason for their adoption.

Uterine hemorrhage after delivery, can arise from one cause alone, that is, from a patulous state of some or all of the great uterine sinuses, resulting from a want of due contraction in the

uterine parietes. The only remedy for this is a proper contraction of the fibres through which these vessels pass obliquely. Uterine contraction is, therefore, the only protection against uterine hemorrhage; and unless in the case of morbid adhesion of the placenta, when this mass cannot be expelled by the natural means, it will be always effectual. With respect to the hour-glass contraction, caused by irregular, or partial action of the fibres of the uterus, I am inclined to think that it arises in many cases, from too much haste in delivery, by which the uterus is emptied before it is disposed to expel its contents; or from neglecting to secure a complete and permanent contraction of this organ after it has discharged itself.

Now when we consider the means employed to produce contraction of, and arrest hemorrhage from the uterus, we find that direct stimulus by external force, applied to this organ by grasping, friction, and firm pressure over the pubis, is decidedly the best; and any man who places his chief reliance on these means in such a dilemma will have little reason to regret his confidence in them. I speak now of cases unattended with morbid adhesion of the placenta. I know that this was the course pursued by my father, the late Dr. Beatty; and that during a very extensive midwifery practice for forty-years, he never lost a patient from uterine hemorrhage. Let it not be supposed that I wish to discard other assistance, such as the application of cold, &c., I only desire to place the former in the first rank.

Early impressions are very lasting, and therefore I have a vivid recollection of the first case of serious uterine hemorrhage I ever witnessed. I was called in the middle of the night to a patient, who had been attended by a very young man, a student of midwifery. The labour had been natural and easy; but after the birth of the child, and before the expulsion of the placenta, a deluge of blood escaped; and when I arrived, there was not only a sea of it under the patient, but also a stream along the floor, that had issued from the foot of the bed. I

found the attendant pale as a corpse, and almost frightened to death, with a bucket full of water beside him, and numerous cloths soaked in the same, which he diligently applied to the external parts. Notwithstanding which the bleeding still continued. The woman was blanched, the pulse failing at the wrist, she was tossing her arms about, and crying out for more air. On passing my hand over the abdomen, and feeling the uterus large and flaccid, I immediately exerted all my force, in grasping, and firmly pressing this organ downwards into the pelvis, and very soon found it contracting forcibly under my fingers. At this moment a rush of coagulated blood took place which nearly extinguished the little remaining spark of life in the attendant, but was a matter of great consolation to myself, as I took it as a token of having succeeded in my endeavours. In this I was not deceived; the uterus had fairly contracted, and the hemorrhage was at once arrested. I kept up the pressure on the uterus with my left hand, and passed the forefinger of my right into the vagina, to ascertain the state of the placenta, which I found now lying loose in that passage, from whence, after having put on a tight binder, it was easily removed. The woman recovered; but she had lost so much blood, that some days elapsed before she could be pronounced out of danger.

This case made a strong impression on my mind, and convinced me of the great efficacy of external force in producing contraction of the uterus. I am well aware that many authors direct, in cases such as this, when the placenta is retained, that the hand should be at once introduced for the purpose of extracting that body. But I am quite sure that the proceeding I adopted was the best for the patient, in as much as by it, she lost much less blood, than must have attended that operation; a circumstance of no small moment to an individual who had already suffered so severe a loss. If I had found the natural contraction of the uterus insufficient to expel the placenta, I would then of course have proceeded to extraction.

Now, as I have already said, we cannot tell when hemor-

rhage may take place after delivery ; and no one will deny that it is much better to prevent its occurrence if possible, than to have to contend with it after it has commenced. The best way then to effect this purpose is to look for the natural protection ; that is, to insure a full and complete contraction of the uterus. This is attained by making the organ perform the whole process of expelling the child itself, even to the feet ; and never, by any injudicious haste, assisting the delivery by pulling the child. A practice pretty generally employed in this city, and lately taken notice of by Dr. Maunsell, is of great utility in this part of the process ; that is, after the expulsion of the shoulders, to place the left hand on the abdomen of the woman, and follow the uterus by firm pressure, until the whole child is expelled. After this has taken place, if the child be alive and cry, the right hand, which had been employed in supporting its head and body, may now be disengaged, and the child laid in the bed, until more important matters are attended to. The chief of these is the proper application of an appropriate binder, previously passed loosely round the body of the woman. This I consider a very important part of the treatment, for it at once insures an equal and firm pressure on the uterus, and prevents its subsequent relaxation ; while it leaves the practitioner at liberty to attend to the child. But the kind of binder usually employed, is very ill calculated to accomplish this end. It is commonly made of some straight narrow material, as a folded towel, a piece of linen, or what is still worse of flannel, any of which, it is utterly impossible to apply in such a manner, as that it shall keep its place, and exert the uniform pressure which is so desirable ; as from the shape of the woman's body, it must slip up over her hips, and it finally runs into a simple cord round her waist, no matter how broad it may have been, or how accurately it may have been at first fastened.

To obviate this difficulty, I make all my patients provide themselves with a binder, according to a pattern which I have constructed, and have found of the greatest use and convenience.

It is made of jean, or twilled calico, doubled, and broad enough to reach from the eighth or ninth rib to the trochanters ; with two long triangular pieces, termed in millinery gores, let in to enlarge the diameter below, and fit the hips, just as female stays are made. It is furnished with a row of buckles arranged along one end ; and at the other, with a corresponding number of straps, made of the same material as the binder. The straps are about seven inches long, and are sewed not to the edge, but about seven inches from it ; so that when they are passed through the buckles, the floating portion passes under the opposite end, and protects the skin from pressure. A very thin piece of whale-bone, 1-3rd of an inch broad, is inserted, so that when the binder is applied, it runs straight down the middle of the abdomen from the thorax to the pelvis. A bandage such as this fits easily, without any unequal pressure when drawn tight ; never shifts its place when made well, and properly applied ; and effectually accomplishes the object for which it is intended. I have employed it with several ladies who had been in the habit of using the common kind, and they invariably express the greatest comfort from its use.

It has been said above that the binder should be passed round the patient before the birth of the child, and this whether the ordinary one, or that just described be employed. Such a proceeding will be found possessed of many advantages. We have it ready to tighten at the very time when pressure is most wanted and most useful ; and we are saved the necessity of moving the patient to put it on, at a time when perfect quietness is so much required ; as it is well known, that in women disposed to uterine hemorrhage, any motion, however slight, may cause it to take place. The binder may be slipped under the patient at any time during the labour ; but I prefer delaying it until the head of the child has entered the pelvis ; for its application is taken by the woman as an earnest of a speedy delivery from her sufferings, and if the labour is not terminated in a reasonable time after it is put on, she is apt to become disappointed and

dispirited. The method of application is simple. The end to which the buckles are attached, is to be passed under the patient, and caught by the nursetender or other assistant at the opposite side, who pulls it towards her until sufficient has passed to come round the abdomen and meet the straps along the right side. If the membranes have ruptured early, and the waters are draining away, the bandage is easily kept from moisture, by doubling up the part that passes under the left hip of the patient, and keeping folded napkins under her which can be changed as often as is required. If the membranes continue entire until a late period of the labour, we can by similar means preserve the binder dry, whether we allow the waters to break spontaneously, or we rupture them intentionally. In either case then, it is well to double up the part on which the patient would lie, when first put on ; and this, when it becomes necessary to tighten the bandage, is easily restored to its proper place. The length of the straps permits some of the uppermost to be loosely fastened before the child is born ; but this should be done merely with a view of keeping the bandage in its place, and not at all of exerting pressure at that time. Some ladies prefer having two of them, so as to have a change if by any accident the first should get wet ; but by adopting the precautions already mentioned, I have rarely been obliged to change for this cause.

As soon as the child is expelled, and when the uterus is felt by the hand still kept on the abdomen, to be well contracted, the binder may be tightened. It is best to begin with the middle straps, and proceed regularly downwards, after which the upper may be secured. The necessary attentions may now be paid to the child, and the cord divided in the usual manner. By following this line of practice I generally find, after separating the child, that the placenta is thrown down into the vagina, and thus all uneasiness with respect to it is removed. When the placenta is thus detached, and lying loose in the vagina, I see no use in allowing it to remain there any length of time ; there is no risk of hemorrhage by its removal, for that is guarded

against by causing and maintaining a proper contraction of the uterus ; and to delay its extraction, is only to prolong the anxiety of the patient and her friends. It may, therefore, be withdrawn as soon as suits the practitioner's convenience. If, on the other hand, the placenta should be retained within the uterus, (a circumstance which, except in the case of morbid adhesion I never met in patients treated as above,) it must be dealt with according to the established rules, which it is unnecessary to mention here.

The course of proceeding just detailed is admirably calculated to prevent the hour glass contraction of the uterus, by causing it to contract uniformly, and from its fundus ; and it is also our best protection against that insidious, and too frequently fatal accident, relaxation of the uterus after delivery, accompanied by internal hemorrhage ; a circumstance which usually does not occur until the practitioner has left the house ; sometimes not for several hours after, a remarkable example of which was lately mentioned to the writer by Dr. Montgomery, where it took place twenty-four hours after delivery. This form of hemorrhage is supposed by Dr. Ramsbotham to have been the cause of the death of the Princess Charlotte. One passage from the highly valuable work of the author just named will be sufficient to explain the views I entertain, and the benefit to be derived from permanent pressure on the uterus. Speaking of relaxation of the uterus after delivery, and its subsequent enlargement, he says, " But it sometimes happens, that after the uterus has expelled its contents, after it has seemed to the hand to have acquired a considerable share of contraction, and of diminution in size, it suddenly relaxes, and becomes larger and more flabby ; it increases in bulk and extension in every direction. At the time this increase of size is going on, or shortly after, the patient complains of faintness ; her countenance loses its colour, and its usual appearance ; her pulse becomes quicker and smaller, and she has other symptoms of depression. On examining the napkins and linen, a very trifling discharge of

blood is found to have taken place externally, which leads to the belief, that the patient is not then losing much blood ; and therefore little alarm is excited from this obvious loss ; but if this security be indulged without farther and more minute inquiry, if the case be not understood, the patient will soon be placed in a situation of danger, from which she will with difficulty be extricated. If at this time the hand be applied upon the abdomen, and such a degree of grasping pressure be made on the uterine tumour, as shall produce some contraction, or if uterine action spontaneously come on, a quantity of coagulated and fluid blood is immediately expelled, which leads the patient to suspect that she is then flooding, and she generally expresses such suspicions with much anxiety for her safety. After such an evacuation of blood, the uterine tumour lessens in bulk, and becomes firmer under the hand. As long as the pressure of the hand is continued, or in case the frequent repetition of natural contraction ensues, the uterus maintains a diminished bulk ; but upon the pressure of the hand being removed, or if repeated returns of the after pains do not take place, the same occurrences are renewed, the uterine tumour assumes less firmness and again increases in size ; the sensation of faintness also returns ; upon external pressure being again made, a similar evacuation is the consequence. These occurrences may be repeated, till either the uterus attains a more perfect and permanent state of contraction, whereby its subsequent distention, and the further efflux of blood from its vessels are prevented, or till the woman sinks from loss of blood.”* Now with such convincing evidence of the utility of continued pressure, it appears strange that so experienced and able a writer should overlook the obvious remedy of permanent pressure by means of an appropriate bandage ; but so it is, and throughout his otherwise most excellent work, no mention whatever is made of such a resource. I am inclined to think that if the binder had been in

* Ramsbotham's *Observations on Midwifery*, Part I. p. 187.

more common use, the work would not have contained so long a list of cases of uterine hemorrhage after delivery, and probably the country would not have to lament the premature death of an amiable princess. It is much to be feared that the high authority of Denman has misled many practitioners, particularly in the sister country, as to the true value of the binder, and has induced them to relinquish it altogether in the practice of midwifery. Indeed I have reason to know that in several parts of England it is very rarely used. "Some years ago," says Denman,* "it was a general custom to bind the abdomen very tight immediately after delivery, with the view of aiding the contraction of the integuments, and of preserving the shape of the patient. In some countries, India in particular, this was practised to a degree that one cannot think of without shuddering at the mischief which must of necessity have been very often occasioned. In this country the practice has been very much discontinued as useless and pernicious, and it is now wholly or nearly laid aside, except in particular cases, which have been already specified, till five or six days after delivery; when a broad band, daily but very gradually drawn a little tighter may be applied not only without injury but with some advantage." From this it is evident that he did not appreciate the power of this agent to produce and maintain uterine contraction, the only important object to be attained by its use; the subsequent shape of the patient, although a matter of some moment, being so very light when compared with her present safety, that it is scarcely to be taken into the account. What the pernicious effects of it are, to which he alludes, but which he does not mention, I cannot understand, at least I have never known any to follow its use. Many modern authors recommend pressure, and the use of the binder after hemorrhage has actually commenced. A late distinguished writer,† in speaking of uterine hemorrhage

* Introduction to the Practice of Midwifery, p. 426, 6th ed.

† Dr. R. Lee on some of the most important Diseases of Women, p. 214.

after the expulsion of the placenta, thus expresses himself: "By far the most important remedies, and those on which I place the chief reliance in these formidable attacks, are constant and powerful pressure over the fundus uteri, and the application of cold to the external parts. These means are always within reach, however sudden and impetuous the rush of blood from the uterine vessels may be, and if promptly had recourse to, they will, in a large majority of cases, prove completely successful in saving life. The abdomen should be strongly compressed with the binder and folded napkins placed under it, and, in addition, the hands of an assistant should be applied over the fundus uteri firmly to squeeze and press this organ."

This is very excellent advice, and should of course be followed in all such cases of emergency. But the object of the present communication is to recommend a precautionary rather than a remedial line of conduct. To prevent is always better than to cure, provided the means employed are safe; and I am sure there is no man who has had to encounter uterine hemorrhage, who would not most anxiously desire to avoid so alarming and dangerous an occurrence. It is very true, as has been already stated, that with a great majority of patients, such precautions as have been mentioned, are unnecessary, but who can tell when they may not be absolutely required. The safe course therefore is, to treat all parturient women as if they were about to be attacked with hemorrhage; they are in fact all in danger of it; and when the means proposed are safe, simple, and easily executed, I do not hesitate to recommend their adoption to every one, anxious to conduct a labour to his own satisfaction, and the safety of his patient.

It is necessary that the binder described above shall be made to fit the patient; for this purpose all that is necessary is to have the measure of her waist before its enlargement by gestation. This is obtained by taking the length of the waistband of one of her dresses worn before the increase in size commenced. This length is to be marked on the binder, measuring from the end

on which the buckles are attached, and the straps are to be sewed on at that place. The length of the straps, and the gores which are inserted below, give sufficient accommodation for the size of the pelvis.

MAMMARY ABSCESS.

The new office which the mammary glands have to perform after parturition, is attended with a considerable increase in the activity of the circulation in these organs. When this increased action is confined within moderate limits, there is no danger to be apprehended from it; fulness, tension, and knotty hardness, accompanied by some pain, and slight fever, are the effects produced, which usually subside under proper treatment in the course of a few days. But it sometimes happens that this vascular action passes the natural healthy limit, and runs into inflammation and suppuration, constituting that most distressing disease mammary abscess. Some women are particularly liable to this affection, and it is notorious, that a breast which has once been the seat of such inflammation, is very apt to suffer from it after future deliveries. It attacks women who suckle, as well as those who do not, and although its invasion happens most frequently during the first month, there is no period of lactation in which it may not occur. The ordinary treatment of this disease too frequently fails to check it; and despite of all our efforts, it usually proceeds to suppuration and abscess. I have been in the habit of combating this affection in a way first communicated to me by my friend the late Mr. Gregory, who employed it with great success in the Coombe Lying-in Hospital. I have found it equally useful in hospital and private practice, and as I am not aware of its being mentioned by any writer, I take this opportunity of doing so. The remedy to which I allude is tartar emetic, whose power of controlling inflammatory affections of the breast would almost lead one to imagine that it exerted a specific action on the mammary gland.

On the accession of inflammatory symptoms in the breast, after purging the patient, I administer this medicine in doses of one-sixteenth of a grain, repeated every hour, so as to induce slight nausea. It is never my object to cause free vomiting, and if this should occur, I omit the medicine for an hour or two, and then recommence its use at longer intervals. In ordinary cases, I usually find after twenty-four hours, that the pain and fever are mitigated, and the breasts are smaller and softer. If these effects are not produced in that time, I double the dose, provided the stomach will bear it, and it rarely happens that it will not, for I have observed that in those cases which do not yield easily, the stomach is very patient of the medicine; probably this circumstance is the cause of the obstinacy, as it appears necessary to cause some nausea before the disease begins to yield.

I lately attended a lady who had had mammary abscess after her last three accouchements, and being obliged by particular circumstances to avoid nursing, she was very apprehensive of a similar consequence on this occasion. On the fourth day after delivery, the breasts, particularly the left one, which had been the most frequent seat of abscess, became enormously distended, red, and painful. She was now convinced, from the sensations she experienced, which so much resembled what she had felt on former occasions, that her anticipations were about to be realized. This impression was so strong, that she at first objected to take any medicine, thinking it useless to attempt to stop the progress of the disease. I administered a smart purgative, and put her on the use of the tartar emetic as mentioned above. The following day there was no amendment, and on inquiry, I found that she had had no sickness of stomach. I doubled the quantity of the medicine at the same intervals, and this produced some slight nausea, and acted briskly on the bowels. The day after, I found a diminution in the urgent symptoms, but still the breasts wore a threatening aspect. I continued the medicine in the same doses for twenty-four hours

longer, and at the end of that time, I had the satisfaction to find the pain, redness, and tumefaction considerably abated. She finally recovered, without abscess in either breast. This was an extreme case, and one well calculated, from the circumstance of the previous inflammations terminating in suppuration, to try the powers of the medicine.

I have frequently used this medicine in the hard knotty condition of the breasts, which so frequently attends the first week of lactation, and have found it contribute much to the relief of the patient, by causing softening and discussion of the tumors. It may be also used advantageously when, after weaning, the breasts become hard and painful. In the true mammary abscess, after the matter is discharged, it not unfrequently happens, that a considerable hardness remains in the breast, which is difficult to remove, and often forms the nidus of fresh collections of matter. In such a case I have found the administration of tartar emetic produce very favourable effects. It appears to me that this medicine (independently of its general antiphlogistic properties) is possessed of some specific power over the mammary gland, capable of controlling any violent inflammatory action established in that organ.

SECALE CORNUTUM.

There is probably no medicine, upon the virtues of which more contradictory testimony has been given than the secale cornutum; some authors attributing to it very energetic powers in causing contraction of the uterus, while others totally deny that it is possessed of any. In such a divided state of professional opinion, I think it is incumbent on every one who has had an opportunity of witnessing its effects, to record his experience, in order that it may be added to the general stock. Accordingly I proceed to relate the following case, which occurred to me in the month of June last, in which it seemed prudent to administer this medicine.

Mrs. K., æt. 35, pregnant of her fourth child, took her

labour early in the morning of the 21st. The pains were very slight, and did not increase in severity during the whole of that day, although the membranes had ruptured early, and the waters continued draining away. She slept, with occasional interruptions, during the night, and the pains continued of the same slow, weak character during the following day. Some increase in their severity, however, occurred about 2 P. M., and at 5 P. M. I was summoned for the first time. On my arrival, I found that the pains, which had been pretty strong for about two hours, had now entirely subsided; and she was walking about her chamber. On examination I detected the head of the child presenting with the vertex, and almost touching the perinæum, the os uteri dilated, and the external parts relaxed, moist, and cool. I retired to an adjoining room to wait for the return of pains, expecting that a short time would terminate the labour. Hour after hour passed by, however, without any recurrence of uterine action; during which time the bowels were freely acted on by castor oil, which she had taken previous to my arrival. At length, at half past ten o'clock, just six hours from the cessation of the pains, and about thirty-six hours from the commencement of labour, finding the uterus still sluggish, I determined to try the ergot. For this purpose I infused one drachm of the powder in four ounces of boiling water for five minutes. The fluid was then strained through muslin; and the powder caught on the filter was divided into three parts. One of these I mixed with half the infusion and gave it to my patient. She had not swallowed it five minutes when the pains returned with considerable force, and continued to increase in severity and duration, so that at last there was no intermission, it appearing as if there was one continued effort made by the uterus to expel its contents, and in less than twenty minutes the labour was terminated by the birth of a living boy, followed by the immediate expulsion of the placenta. There can be no doubt that this delivery was effected by the ergot of rye. The case was one particularly suited to its exhibition; there

was no mechanical impediment to the exit of the child ; the parts were all dilated and relaxed, and all that was required was the *vis a tergo* which was most satisfactorily obtained by one dose of the medicine. Had I failed with the ergot in this case, I would not have hesitated to employ the forceps if the uterus had remained much longer inactive.

It may be asked, how comes it that a medicine capable of producing such prompt and decided effects with some practitioners, should fail in the hands of others ?* I think the reason must lie in one of these causes : either the medicine was not carefully chosen, or the dose was too small, or the cases were unfit for its operation. There is good reason to believe that many of the failures are owing to want of care in the selection of the medicine, particularly since the experiments of MM. Boettcher and Kluge, which shew that the efficacy of the medicine is greatly influenced by the time of year at which it is gathered. It appears from the observations of these gentlemen, noticed in No. VIII. of this Journal, that the ergot collected from the rye before harvest is very energetic, while that taken from the grain after it is cut is quite inert. If, therefore, the latter have been used, it will fail to produce the desired effect, and throw discredit upon the genuine article. Another circumstance to be attended to, is, that by keeping, it loses its virtues in consequence of becoming mildewed, so that it should never be employed after it is a year gathered ; and during that time, it should be kept in well corked bottles. It is likely that the dose has been too small in some of the instances of failure, from men being afraid to give too large a one ; but if proper cases are selected for its exhibition, doses of half a drachm may be given ; or, as I did in the case just mentioned, a scruple of

* A practitioner in extensive business in Dublin, lately observed to the writer that, "he was tired trying the ergot of rye, for he had never found it of the least use."

the powder in the infusion of half a drachm. M. Kluge recommends doses of ten grains, repeated every ten minutes; but I think it would be better to give such a dose as I have mentioned, which will probably not require repetition more than once, and if the case be suitable, can scarcely cause any mischief. This medicine is certainly inadmissible when there is any mechanical impediment to the exit of the child, from deficiency in the pelvis, or other cause. It should never be used to enable a uterus to overcome a difficulty, as in such case there must be danger of rupturing that organ; its legitimate use is to stimulate a torpid uterus, when there is no serious obstacle to the escape of its contents. On these grounds it is useful in cases such as the one described, when inactivity of the uterus is the only impediment to delivery; or when internal hemorrhage has taken place from relaxation of the uterus after delivery; or when dangerous hemorrhage attends the expulsion of hydatids. In cases of both the latter description I have known it to act beneficially. I lately attended a lady in her accouchement, for my friend Dr. Montgomery, who after a previous delivery was very near dying from relaxation of the uterus, which he at once controlled by the ergot of rye.* I mention this particularly, in consequence of the denial of its efficacy in that condition of the organ, lately made by Dr. Lee, who says, "In a few cases the ergot of rye has been administered both before and after the expulsion of the placenta, but invariably without any sensible benefit, and many other cases have been related to me where it appears to have been equally inefficient in exciting the uterine contractions."† Some years ago I saw a case with the late Mr. Gregory, in which the woman was dying from hemorrhage attendant on the expulsion of hydatids, which had been mistaken for pregnancy. Some of

* Since writing the above a similar case occurred to Dr. M., in which this medicine was administered with a like happy result.

† On some of the most important Diseases of Women, p. 215.

the mass had been expelled, but the great bulk remained behind, and she was flooding to a frightful extent. He administered the ergot in a large dose, which was quickly followed by forcible contraction of the uterus, and the expulsion of some basins full of hydatids, which put an end to the hemorrhage. I think this woman's life was saved by the medicine, for no manual operation could have effected their extraction, without a great and dangerous increase of hemorrhage at the time. In all these cases forcible contraction of the uterus was the only thing to be desired; there was no apprehension for the safety of this organ, because there was no resistance to the expulsion of its contents, and I think such cases are peculiarly those in which the ergot is indicated. After the child is born, and when hemorrhage takes place from relaxation of the uterus, it may be administered to any woman as an adjunct to the means proposed in a former part of this communication. If we find these endeavours to arrest the hemorrhage fail, then the ergot may be administered; but from what has been already said on uterine hemorrhage after delivery, I think such cases ought to be very rare.

ART. XX.—*Medical Problems*. By W. GRIFFIN, M. D.,
Limerick.

EVERY Physician, in the course of his practice, must occasionally meet with cases, which he perhaps too readily considers of little value to the science of medicine, either because they are rare in themselves, and hence more worthy of note in the history than in the treatment of disease; or that from being isolated and extraordinary, they furnish little ground for inductions of any kind.

It is not, perhaps, sufficiently considered, that it is only by regular records of extraordinary cases, that our experience can

ever accumulate to an extent which might enable us to reason on them as we do on ordinary occurrences. What is rare in the course of one man's life or observations, is frequent in the lapse of centuries, and if a faithful record of what appears singular be of little use to ourselves, it will, nevertheless, supply materials to those who succeed us, from which some general or useful conclusions may be drawn. Independent, however, of these considerations, I believe it will be found that the rarest case which can occur, is after all of some immediate practical interest, either as it casts some new doubt on former conclusions, or suggests new questions to the mind, which it is of the utmost importance to have answered.

Reflections of this nature have led me to believe that I might gather a few cases from my notes, which, however slight in themselves, might, in the serious questions which they involved, prove of some interest. They are selected rather from their probable utility in this way, than from their singularity alone, and without much regard to the degree of light which any experience of my own could throw around them. I lay these rare or interesting facts before the profession as they occurred to myself, and invite assistance in the solution of the problem they suggest.

PROBLEM I.—*On what morbid State does the Occurrence of Coma, and sudden Death in Jaundice depend?*

A poor woman requested me to visit her daughter, Mary Barry, aged twenty years, who she informed me had been three days ill, and was now speechless, and she believed dying. On entering the cabin in which she lived, I saw her make a faint expiration, which proved to be her last, as she was quite dead when I reached the bed. Her skin was still warm, and universally tinged with a deep yellow colour. The countenance was hydropic, and the pupils dilated. On inquiring, I found the girl's ailment had set in with langour and heaviness; on the second evening she was seized with sickness of stomach, vomiting, and appearances of jaundice, and next morning complained much of her head. She then looked so very ill, that

her mother began to get alarmed, and insisted on her going to the dispensary for advice ; the poor girl shook her head despondingly, and said she was too weak to walk there, but that she would go into the room and lie down on the bed. These were the last words she uttered ; when the mother went in afterwards, there was an appearance of stupor about her, from which she endeavoured to rouse her, but could get no reply.— She was in profound coma !

In about three weeks after, I was called to see Ellen Barry, a sister of the former, and found her labouring under an affection precisely similar. She had been attacked with langour and heaviness, followed by sickness of stomach and vomiting, with universal yellowness of the skin. She was now in imperfect coma ; concious when roused, but unable to speak, and very unwilling to be disturbed. From this very dangerous state she was rescued by active and continued purging ; the yellow tinge gradually disappeared, and in a few days she regained her usual health.

Within a very short period afterwards, another member of the same family was attacked ; a boy, of about 13 years of age. My brother was requested to see him, and found him moaning and comatose ; his belly tender to the touch, his pulse slow, and his skin of a saffron colour : his breathing was not stertorous. This case was more sudden than either of the foregoing ; the boy was seized with sickness of stomach and vomiting at night, and in the morning was jaundiced and insensible. In this state he lay, until nearly the end of the second day, without medical aid, up to which period his bowels had not been moved. An ineffectual effort was then made to purge him, but he was unable to swallow, and died in a few hours.

The parents were now, it may be supposed, highly apprehensive for their remaining children, and the event proved not without just reason. After the lapse of a few months, their next boy, John Barry, aged eleven years, shewed symptoms of jaundice. He grew languid and heavy, and in two days

the tunica albuginea and skin were of a deep yellow. There was great sluggishness of the bowels, and slight tenderness of the abdomen, but very little pain. He did not complain of his head, but, like the others, was seized with sickness of stomach and vomiting. I had early notice of this attack, and was vigilant in looking for the supervention of coma, although from any existing symptoms there was no greater reason to apprehend it than in any common case of jaundice, if I except some slight dilatation of the pupils and sluggishness in their movements. The boy was up and about, and did not in fact appear to be very ill ; but the fate of his brother and sister left a lesson not to be forgotten, and I accordingly warned the mother to give me instant notice on the occurrence of the slightest stupor,—he was in the mean time actively purged. There was little change in him that night or the next, but on the succeeding morning I had a messenger with me at an early hour, to say that he had fallen into a state of insensibility in the night, and could not now be roused. I found him quite comatose, with slow pulse, dilated pupils, and almost a total loss of sensation and voluntary motion. On pinching his hand severely, however, he evinced signs of consciousness, moaning slightly, and slowly drawing his hand away. Ten ounces of blood were immediately taken from the temporal artery ; the head was shaved, and kept wetted with refrigerant washes, and castor oil was administered every fourth hour. As the bowels were slow in acting, injections were given at night, and large blisters applied to the nape of the neck. These had the desired effect. He was copiously purged for several hours, and in the morning evinced signs of returning consciousness ; from thenceforward there was, day after day, a steady and progressive improvement, until his recovery became fully established. Some time after his friends were once more alarmed by a recurrence of the vomiting and jaundice : but the progress to coma was arrested, and the complaint readily removed, by full purging alone.

These four cases of jaundice running rapidly into coma, which

in two of them terminated in death, when we consider that they occurred in one family,* within a few weeks of one another, and without any unusual or remarkable symptoms which could indicate the impending danger, suggest a very important question with regard to the pathology of the disease: "On what morbid state did the occurrence of coma in these particular instances depend?"

In referring to the works of different authors who have written on the subject of jaundice, it surprized me much to observe, that the occasional supervention of coma and sudden death is scarcely adverted to. This is not noticed even by Cullen or Parr, as a possible termination of the complaint, nor is there any mention made of it in some of the more modern medical treatises,† a circumstance perhaps scarcely deserving of remark if the occurrence was really rare. We might offer many evidences to prove that it takes place too often to be left at any time out of view in our consideration either on the prognosis or treatment of the disease. Mr. Gilbert Burnet and Dr. Macleod, in a discussion on the subject three years since at the Westminster Medical Society, detailed several cases, which with few appearances indicative of danger, ran rapidly to coma and death,‡ and those published by Dr. Marsh in the Dublin

* I have been inclined to think jaundice is sometimes occasioned by certain states of the atmosphere, from its now and then attacking many individuals in the same locality. I was myself suddenly affected with it some years since in common with my servant and many others in the neighbourhood in which I then resided. These were all under empirical or regular treatment, and recovered in four or five weeks. I took no medicine, except an occasional mild aperient, lived on roasted apples, almost the only food I could use, and was well in three weeks. The cause of the disease is frequently so obscure, that we really do not know what value to attach to medicine, even where recovery takes place.

† Dr. Mason Good speaks of the occasional occurrence of apoplexy in green jaundice only. Dr. Mackintosh, in his *New Practice of Physic*, makes no mention of it; and the writer on jaundice in the *New Cyclopædia of Medicine* is equally silent.

‡ See *Medical Gazette*, vol. v. p. 631.

Hospital Reports, illustrating the occasional connexion of jaundice with disease of the brain, were probably of a similar nature.* Dr. Gregory of London calls our attention to the probability of such terminations in severe cases, and Dr. Mason Good speaks of the supervention of apoplexy in green jaundice, chiefly in instances where the pulse was unusually slow. But it is neither in severe instances of the disease, nor in that intense form of it which has been called green, that it most frequently occurs; and nothing so clearly proves how little we really know of the pathology of these affections, than the fact, that the probability of the supervention of coma bears no relation to the intensity of the symptoms. In Dr. Macleod's cases there was little to indicate danger, until fatal coma occurred in one, and epilepsy, followed by coma and convulsions, in the other. In three of the instances which have preceded these remarks there was nothing that could lead one to anticipate immediate danger of any kind, until actual stupor commenced: they were not cases of green jaundice, and previous to the occurrence of fatal symptoms could not even be called severe or unusual.

The general connexion existing between jaundice and certain affections of the brain or nervous system, which attracted the attention of physicians at a very early period of time, and to which the occurrence of the disease from intense passions of the mind has been attributed, while it tends to diminish our surprise at the occasional occurrence of coma, furnishes no clue to the subsisting relation; several explanations have from time to time been offered by those who have paid any attention to the facts, but none that are at all satisfactory. Unfortunately no post mortem examination was permitted in any of the fatal cases which I have mentioned. In one of Dr. Macleod's, that of a young woman who had jaundice for some time, without suffering much inconvenience from it, but who died in 48 hours after the supervention of coma; the only morbid appearance

* Dublin Hospital Reports, vol. iii.

observed in the brain appeared to be, a deep yellow colour of all the membranes.

Although the yellow colour of the skin and eyes has in these cases been always the first circumstance to attract attention, the mutual sympathy, which is known to exist between the brain and liver, have led to a very natural doubt as to which might be the primary seat of disorder, and in fact, in this lies much of the difficulty experienced in endeavouring to explain its pathology. Those who have considered the affection of the head as secondary or symptomatic, have attributed it to a plethora of the circulation in the brain, occasioned, like the jaundice, by a gorged state of the liver, equally obstructing the passage of blood and bile, or to a supercarbonization of the blood, for want of due elimination by the liver, or to a highly azotised state of it from the same cause, the brain being affected in either case as it is in apoplexy from the circulation of venous blood, or lastly to some such sedative effect of absorbed bile on the cerebral organ, as may be induced by opium or other narcotics. On the other hand, those who have considered the jaundice in these instances, as secondary or symptomatic only, have supposed some oppressed or actually diseased state of the brain, making for some time an insidious progress, and at length manifesting itself by suspending the functions of the liver. An accumulation of bile in the blood vessels, it is said, takes place as a necessary consequence, and precedes, though it be no way necessary to, the termination in coma, which is simply the conclusion of the original affection.

Glancing at these conjectures in the order in which I have stated them, it may be remarked, that no such gorged or infarcted state of the liver has been made out in the cases alluded to, while, I believe, in others where such condition of that organ did exist to an extreme degree, there was no supervention of coma; and again, one should suppose, where the danger depended on pure plethora, the complaint would be easy of remedy, which is by no means the fact. It might, perhaps, be said, this idea of a plethoric state of the circulation in the brain, derived

some countenance from the two recoveries quoted, one by pure purging, the other by purging, bleeding, and blistering : but these remedies ere equally applicable to other morbid conditions of that organ.

If the elimination of carbon and azote from blood be one of the chief offices performed by the liver, its total suspension must necessarily lead to a loaded and deteriorated state of that fluid. That such a state occurs to a certain extent, in almost all cases of jaundice, we have manifest proof in the general langour complained of, the slowness and feebleness of pulse, and altered nature of the secretions. That it sometimes leads to actual coma and death, has been already shown, and that the presence of bile in the circulating system, when artificially introduced, produces analogous results, appears from Mr. Phillips's experiments, in which two drachms of bile, injected into the femoral vein of a dog, in a few hours occasioned jaundice, dryness of mouth, vomiting, coma, and death, and in a lesser quantity, effects of the same nature, though less marked.

It would seem superfluous to seek for other proofs of the injurious effects of retained bile, if those I have instanced were any way constant in their occurrence. But that they cannot be received as such, and that they are rather the exception than the rule, must be obvious, when we recollect, how many persons, in whom every texture of the body is deeply imbued with yellow bile, while not a particle passes into the intestines, live for months and years without suffering much inconvenience,* and how infants have grown rapidly, and thriven tolerably, where the hepatic ducts were altogether impervious.† It is clearly

* Dr. Gregory mentions that he has seen young persons continue busily engaged in an active employment, their appetite, sleep, pulse, and tongue, remaining healthy, where yet the jaundiced colour of the skin was intensely deep. It was the experience of this fact, probably, that induced Dr. Fordyce to imagine, that the bile was of no use whatsoever in digestion.

† Sir Everard Home has given an example of a child that fed heartily, seemed to digest its food well, and had regular stools, which was, nevertheless, without a

unphilosophical to attribute effects in one case to a cause which in nineteen others seems incapable of producing them ; but setting these considerations aside, and viewing the question physiologically, there is after all, no just reason for inferring a supercarbonized or azotized state of the blood, from the non-elimination of bile. Tiedemann and Gmelin have made it appear exceedingly probable, "that the pulmonary and biliary organs are, in different tribes of animals, nay, even in different individuals of the same species, in a state of antagonism to one another ; that the size of the liver and quantity of bile are not proportionate to the quantity of food and frequency of eating, but inversely proportional to the size and perfection of the lungs." That in fact, as a secreting organ, the liver is chiefly excrementitious, assisting the lungs and cutaneous surface in decarbonizing the blood, and consequently, when interrupted in its function, the duty is merely transferred to the latter, which immediately take on an increased action. To that beautiful relation and correspondence subsisting between all the organs of the body, and especially those engaged in nearly similar functions, we are indebted for the impunity with which we can occasionally suffer the temporary suspension of any of them, and in no instance is this more strongly illustrated than in jaundice, in which the interruption of the hepatic excretions, those of carbon and azote, is met by increased decarbonization in the lungs and skin, and increased excretion of highly azotised principles by the kidneys. Although it seems improbable, that a poisonous state of the circulating fluid can occur in this manner, the occasional consequences of jaundice necessarily countenance the less definite conjecture, that bile retained in the circulation acts, at all events, in some way or

gall bladder, or even a duct of any kind leading from the liver to the duodenum. Dr. Blundell records the case of two infants, four or five months old, in whom the hepatic ducts terminated blindly, so that no bile entered the intestines : the stools were white, like spermaceti, and the skin jaundiced ; but the infants had grown rapidly and thriven tolerably notwithstanding !

other, as a sedative on the brain and nervous system. To this idea may be traced the frequent application in practice of many influential remedies, and the still more frequent attempt at explaining the most striking phenomena in very obscure affections, by referring them to obstruction in the liver. It is clear, however, we can as yet go no further than to admit some connexion between these effects and their supposed cause, as they bear no regular proportion to it in their intensity, and are anything but necessary results. We know no more why sedative effects should result from obstruction to the flow of bile in some instances, than we do of their total absence in others.

An endeavour has been made to draw some distinction between cases of jaundice in which the bile is not eliminated by the liver, and those in which it has been secreted and re-absorbed. That such distinction exists, and that the former are of a more dangerous nature than the latter, inasmuch as they necessarily include either paralysis, or great disorganization of the organ, no one can deny; but it does not follow from this, that the system sustains more injury by the want of elimination of bile, than by its secretion and absorption. The cases usually end fatally, not because the blood is more vitiated, but because the vitiation, such as it is, varies from, and is accompanied by more serious disease. If, then, we cannot account for these cases of sudden coma, by any absolute effects of retained bile, it only remains for us to inquire whether they might not be explained on the supposition of previous cerebral disease.

There are very many interesting facts, which would tend to shew, that the brain is, in some instances at least, the organ primarily in fault in jaundice. Besides the well known occurrences of abscesses, and other diseased states of the liver, from injuries of the head, sudden yellowness of the whole person has not unfrequently followed intense mental emotion, and has often been observed in fevers, and other diseases in which the brain and nervous system have been much affected. Some of the cases published by Dr. Marsh, to which I have already adverted, seem

to have depended on an affection of liver, and of the mucous coat of the intestines, originating in cerebral disease. If, in such instances, we could suppose the affection of head to be so obscure, as altogether to escape the attention of the practitioner previous to the occurrence of jaundice, there would be little or no indication of an unusually dangerous form of the disease. He would almost necessarily attribute the headach, langour, and sickness of stomach, to the retention of bile in the circulation and supervention of coma, and apoplexy would seem sudden and unaccountable, when, if he could have suspected the source of the disease, it would have been anticipated as a very probable termination.

We have not, unfortunately, a sufficient number of reports of post mortem examinations in those cases, to form any decided opinion on the subject. If, with such imperfect materials, even a conjecture might be hazarded, I should, on the whole, be disposed to say, that the cerebral affection is rarely the primary disease, but is superinduced, we know not how, by the suppression of a most important excretion, as it sometimes is in the suppression of the catamenia, and almost always of theurine. When we find inflammation of the brain or its membranes, suddenly brought on by obstruction of the uterine or renal discharges, we cannot be surprized that a suppression of one of the most important in the whole system, whether as a secretion or an excretion, should occasionally induce it. That the occurrence of coma in jaundice generally depends upon some such state, suddenly induced, and not upon previous or long standing cerebral disease, would seem very probable, from the success of the treatment, and rapid recovery of two of the cases reported, and from the fact, that in the only one of Dr. M'Leod's in which there was an examination after death, no disorganization of the brain was discovered. I cannot tell why cerebral inflammation should arise from obstruction to the flow of bile in one instance, and occasion no such result in a hundred others, any more than I can account for its somewhat rare occurrence in suppression of the menses.

These observations are offered, however, not with a view to the solution of the difficulties which have been pointed out, but as a faint light to the practitioner, until the question can be investigated with some prospect of success.

ART. XXI.—*On the Treatment of Porrigo Decalvans with a Solution of Tartar Emetic.* By HENRY C. BEAUCHAMP, M. D.

As the hair has always been considered the greatest natural ornament, so we find that much pains have been bestowed upon it among all nations, and that the various diseases which affect the hairy scalp, have from the remotest ages attracted the attention of medical men, who often experience no small embarrassment in their treatment, and perhaps I could scarcely mention a disease which has more frequently baffled the skill of the physician than that named *porrigo decalvans*. The propriety of placing this affection in the genus *porrigo* I much doubt, but shall not, however, stop here to consider its proper place in a nosological arrangement, as my object is merely to detail the result of two cases which were successfully treated by the use of a solution of tartar emetic.

I was led to try the effects of this remedy in the disease before us, in consequence of a conversation with my friend Dr. John Carter, an army surgeon of considerable experience, who informed me that he had often succeeded in restoring the growth of hair which had fallen off after acute diseases, the use of mercury, &c., by applying to the scalp a solution of tartarized antimony, of the strength of five grains to an ounce of distilled water: the idea immediately struck me that the same means might probably be useful in the baldness produced by this species of *porrigo*, and I resolved to give it a trial on the first opportunity.

Shortly after this, a young lady, a governess in a respectable

family, applied to me, saying, that in combing her hair she had a short time previously observed a part of her head, about the size of a half-crown piece, was completely bald. Upon examination, I found that this portion of the head, unlike what generally happens, was slightly red, and I thought it more advisable to apply a few leeches in the first instance, intending to follow up the treatment with the solution, but here there was no necessity, as the hair began to grow very quickly after the second application of leeches. The lady then went to the country, and after a lapse of several months she returned to Dublin and applied to me again with another portion of the head bald; the hair, however, on the part first affected, had grown to a considerable length during the interval, the portion now without hair presented the usual appearance, being white, smooth, and glossy. As leeching had produced so good an effect before, I was induced to try it again, but without the slightest benefit; I now resorted to the tartar emetic, having the bald surface washed twice or three times daily with the solution; she was obliged again to go to the country, but upon her return I had the pleasure of seeing that the hair had grown of the same colour and consistence with the rest. I have added this fact, because I believe it sometimes happens that when a part of the head has become bald from disease, if the hair grows again, the new hair is somewhat different from the old.*

This is the only case of this disease in which I have observed any appearance of vascularity of the affected part, but perhaps this occurs from our rarely seeing it at a sufficiently early stage, when perhaps some slightly antiphlogistic treatment locally applied might at once remove this unsightly affection. I

* I may here remark that circumstance takes place remarkably in the horse when any portion of the hair has been rubbed off by the pressure of the harness; the new hair is almost always white, whatever may have been the original colour.

must also add, that in this case the solution did not produce any eruption.

The next case in which I had an opportunity of trying the tartar emetic, was that of a young lady, about sixteen years of age, whose parents applied to me to know if there was any means of reproducing the hair which had fallen off. Upon inquiry I found the disease was of six years' standing : that it at first appeared only in one or two spots which were rubbed with tincture of cantharides and the hair grew, but in a few months again began to fall off, when the cantharides failed to reproduce it. A great variety of remedies had been applied ; blisters and many other stimulating substances, but all in vain. When I saw this young lady in May last, more than half the head was bald, in spots varying from the size of a sixpence to that of a half-crown, presenting a smooth, glossy, white appearance, without the slightest trace of vascularity. I directed a solution of tartar emetic, about five or six grains to the ounce, to be applied as a lotion to the head, having the remaining hair shaven ; but, owing to some mistake, the solution applied was of considerably greater strength, the exact strength I could not ascertain, and brought out a large quantity of pustules, similar to those occasioned by the ointment of tartar emetic. When these had healed I perceived a slight down had grown on the affected parts, but of a lighter colour than the remaining hair. I then recommended the hair to be again shaved, and the solution of proper strength to be applied ; but the mother of the young lady, anxious that the cure should be effectual, applied a very strong solution, which not only brought out an eruption on the head, but over nearly the whole body, accompanied by swollen face and considerable fever, to obviate which, I was obliged to resort to antiphlogistic measures, the application of leeches to the head, saline purgatives, and low diet. Under this treatment the fever subsided, and the pustules disappeared in all parts of the body, except the head, where they

were so close as to run into each other, forming an immense scab not unlike some of the severer forms of *tinea capitis*; this, however, yielded after some time to poultices; the lady bathed during the summer months in the sea, and had the head repeatedly shaved, and I have now, the 6th of November, the pleasure of stating that the disease has completely disappeared, and that the head is covered with an uniform growth of hair nearly an inch long.

Although it has sometimes happened that the application of tartar emetic ointment has produced considerable eruption, I never saw, nor do I recollect to have read any account of its producing so extensive a one as happened in this case, or that any eruption so produced was accompanied by so much fever, which I am inclined to think was owing to the great strength of the solution and the peculiar idiosyncrasy of the patient, as no eruption appeared in the first case; and my friend Dr. Carter assured me that he never saw the solution produce eruption, in any case where he applied it to induce the growth of hair which had fallen off after fever or the use of mercury.

It is very difficult to account for the action of the solution of tartar emetic in these cases, as we know it so frequently fails in the cure of *porriigo decalvans* when applied in the form of ointment. I do not pretend to say that it will succeed in all cases, or that it has had a sufficient trial to recommend it to the notice of the profession; but I have been induced by some medical friends to lay the results of those two cases before the public, in the hope that others who have better opportunities may give the remedy a fairer trial.

ART. XXII.—*On the Nature and Treatment of Dropsies, accompanied by Coagulable Urine, and Suppressed Perspiration.* By JONATHAN OSBORNE, M. D., Physician to Sir Patrick Dun's Hospital, and Fellow of the College of Physicians.

PART I.

It has been frequently observed, that dropsy should be considered rather as a symptom than a disease. The occurrence of it as a result of diseases of certain viscera, or of debility, or of impediment to the function of circulation or of respiration, and formed in parts of the body previously sound, ought to have directed attention to those diseased actions, for information as to its nature and treatment. The classifications of dropsies hitherto adopted are about as rational and useful as a classification of diseases accompanied with excessive perspiration, under the title *ephidroses*. Such classifications, embracing various affections, are injurious, by investing with a name a combination which is only a mental abstraction, and has no actual existence in nature. The connexion formed by including affections which happen to produce serous deposits, by the name dropsy, has now begun to be dissolved. It is so well established that many of them arise from different and opposite states of the system, that in most cases inquiry is instituted as to the previous history of the disease, and few are suffered to remain under the obscure denomination of dropsy, without some attempt being made to discover the *cause* of the serous effusion.

One kind of dropsy, however, has been suffered to remain longer under investigation than any other. It is not necessarily accompanied by any distinct local pain, and is not preceded by any disturbance of function, cognizable to ordinary observers, and it has been the work of many years to trace it to a diseased state of the kidneys. The first careful examination of the urine in dropsies, was instituted by the late Dr. Wells. To him

succeeded Dr. Blackhall. Both those observers perceived, that in a great number of dropsies in which the urine coagulated by heat, there was evidence of inflammatory action, and that in such cases, bleeding was productive of very marked benefit. Hence arose the class of dropsies designated inflammatory, and the practice with respect to these was much improved and rendered more successful, by combining bleeding with diuretics, to which latter class of medicines the treatment had been hitherto exclusively confided. In addition to the cases adduced by Dr. Blackhall, we have those recorded by Dr. Crampton, in the Memoirs of the Association, which prove the benefit derived from bleeding in some cases, which, until this mode of depletion was practised, were progressively approaching a fatal termination. Here, however, the inquiry rested, till Dr. Bright made the important observation, that coagulable urine was connected with a diseased state of the kidneys. Since the publication of his work, Drs. Gregory and Christison have brought before the public large collections of cases and dissections, which all bear testimony to the truth of Dr. Bright's observation. The cases of urine coagulating by heat, recorded by Drs. Christison and Gregory, were 87 in number, and amongst those, the granular deposit in the kidneys was always detected when examination after death took place. When these cases are added to the series of cases described by Dr. Bright, it must be confessed that they form a body of evidence to fix the pathology of an obscure disease, which merits the most serious consideration, in order to decide on the affirmative or negative of the proposition which they appear to establish. And yet, what has been their reception on the part of the profession? A few statements were made, which, even if taken in their full extent, are inconclusive, and the truth of the discovery has been obscured by doubts and hesitations, rather than controverted by facts or arguments. The facts produced in opposition, as far as I am able to collect them from the article *dropsy* in the Ency-

clopædia of Practical Medicine, and from Dr. Copland's Dictionary, are the following :

1st. That coagulable urine has occurred in adults who appeared to enjoy good health, and also in children.

2nd. That in some persons it can be produced by taking pastry, or other indigestible articles of diet.

3rd. That Dr. Darwall has adduced an instance of a woman who died from disease of the heart, and in whose lungs there were scattered tubercles, in whom the kidneys were found in Dr. Bright's first stage of disease, although the urine did not coagulate.

We shall consider these statements in their order :

1st. The continuous secretion of coagulable urine by an individual, who, notwithstanding, remains in the undisturbed possession of health and strength, would prove, either that the secretion was not the result of disease, or that if so produced, the disease must be unimportant, and inadequate to the production of any sensible disturbance of the functions. Whether such an instance as this can be produced or not, it is impossible for me to say, but I may be allowed to state, that in a considerable number of trials I have not found one example ; and experience enables me to assert, that many instances may be found of coagulating urine, which appear to be cases of health, but which an attentive examination would prove to be connected with disease. I may adduce, as a specimen, the case of a young man, who, about a year ago, had palpitations and œdematous swellings, for which his medical attendant prescribed bleeding and other remedies, with good effect, and sent him to the country for the restoration of his health : he was lately brought to town, preparatory to the resumption of his ordinary avocations. He made no complaint, the palpitations and swellings no longer existed, and he believed that all his ailments were at an end ; but the eye of his anxious mother perceived that there was still something wanted to perfect health, and he was submitted to my examination. His appearance was healthy, his appetite and sleep natural, and the

only circumstance which affected him was an anxiety as to the motions of his heart, in consequence of the opinion which his former attendant had entertained, of its being the seat of an organic disease. The heart's action, however, was natural ; there remained then no complaint. I had requested that a specimen of his urine should be brought, and on observing its pale and cloudy appearance, tried it by heat, and found it to coagulate. Hence was opened a new field of inquiry, and it appeared that this young man, who, to a superficial view would have appeared healthy, had a sensation of a dull weight in his loins, was in the constant habit of passing troubled urine, with dense mucous clouds, had dry skin, which never perspired except after the most fatiguing exercises, and altogether afforded complete evidence, that the kidneys were in the state which has been described^a by Dr. Bright.

It is true that in fevers, and other inflammatory diseases, an albuminous deposit is obtained on adding a saturated solution of corrosive sublimate. This urine is high coloured, and abounds in urea, yielding abundant crystals when treated with nitric acid, without requiring any previous evaporation. No coagulation, however, is effected by heat, unless it be so long continued at the boiling point, as to evaporate a large proportion of the water. There are also some individuals, who secrete constantly urine of this description, and in whom it may be traced to a habit of drinking very sparingly, by which a concentrated urine is produced. To shew how great the difference, in proportion, is required to produce coagulation by heat, above that by corrosive sublimate, I procured some urine secreted by an individual under these circumstances, which threw down an abundant coagulum to corrosive sublimate, but not to heat ; and found that an addition of a fortieth of its quantity of serum, caused a cloudiness barely perceptible, a considerable time after it had commenced boiling, and that nearly twice that proportion was requisite to enable it to form a coagulum. Thus it appears that such a proportion of albumen as may coagulate with corrosive sublimate, may be consistent with health,

but that the quantity producing coagulation by heat is so much greater, as to require a diseased state for its production.

The albuminous urine observed in children is very probably of frequent occurrence, which yet does not diminish the importance to be attached to it in the case of adults. The urine of children is at all times different from that of adults, in the proportion of its constituents. The quantity of urea and of uric acid is much less, and those are the deficiencies which are usually connected with albuminous urine in the adult. Hence we must not admit the value of albuminous urine as a symptom of a certain disease in the adult, to be diminished by the fact of the same being often secreted in infancy. The secretion is so different, that what is healthy in the adult would be esteemed morbid in the child, and consequently no comparison can be instituted between them.

2nd. Here, however, we are met by the alleged fact, that certain healthy individuals are able, at any time, to produce a secretion of urine, coagulable by heat, merely by taking pastry, or certain other indigestible articles. Now this fact, if worth any thing as an argument, means this, coagulable urine is not an indication of the presence of a certain disease of the kidney, because it may be produced by eating indigestible substances. In this proposition it is assumed, first, that the transient appearance of coagulable urine is the same thing as the continuous secretion of it, which alone constitutes the indication of the organic change of the kidney, of which we are treating, and, secondly, it assumes that this pathological phenomenon can only be produced in the one way, and that by shewing that one way, it is proved impossible that it can be produced in any other. According to this mode of reasoning, we might prove that tenesmus is not an indication of dysentery, because it can be produced by aloetic purgatives, or that coma is not a symptom of apoplexy, because it can be produced by drinking spirituous liquors.

3d. Dr. Darwall's case of uncoagulating urine, in connexion

with the first stage of diseased kidney, as described by Dr. Bright, carries no weight as an objection. The first stage of the disease is very difficult to distinguish from the natural state, and is most likely to be confounded with, and appears almost identical with that paleness of the kidneys, spleen, and liver which occurs in scrofulous cases. And this was evidently a scrofulous case, as appears from the presence of tubercles in the patient's lungs, as stated by Dr. Darwall. Those are all the adverse facts which I have been able to collect, but I find, with regret, that by some this important discovery has not been resisted by facts, but depreciated by loose observations, which deserve animadversion when we consider the injurious effect which such may exercise on the progress of medical science, not so much with reference to this individual question, as to the investigation and settlement of medical questions in general. The truth of the statements made was not impugned; the extent of the field of observation being Guy's Hospital, and the Royal Infirmary of Edinburgh not denied, the number of the observations recorded must have been admitted to be greater than has, within many years, been brought to bear distinctly on any one individual proposition in medical science, and yet all these circumstances were dismissed with the trite remark, that *further observations were required*, a remark which is as applicable to the discovery of the circulation as to the question before us. By this remark we might throw an air of doubt over the best established propositions. It is so easily made, and withal, so true, when applied to every subject, that it is impossible to prove its impropriety. To this, however, has been joined the observation that the writers, and the writers' friends, have not had occasion to observe the connexion, and, therefore, they not only disbelieve it themselves, but call upon others to do the same, without producing a scintilla of evidence whereon to ground our disbelief, except the fact that *they* have not had the opportunities, or have not availed themselves of them, of examining the question by the test of a sufficient number of experiments. This must forcibly remind us of the village lawyer,

who, when his client had been convicted of stealing a sheep, by the positive testimony of three witnesses, who saw him steal it, replied, that that evidence went for nothing, inasmuch as he could produce many more creditable witnesses who did not see him steal it. Thus because those gentlemen have not seen the connexion between coagulable urine and diseased kidney, we are not to be permitted to credit the evidence of those who have seen it, and all the facts before us, the result of long and laborious inquiries on this subject, are to be dismissed with the unmeaning, because universally applicable aphorism, that *further observations are required*.

The recorded evidence which I have to offer is comprised in the tabular view, to be appended to the second part of this paper, which contains thirty cases of coagulable urine. Of this number examinations after death evince the disease of the kidneys in nine cases, while the remaining cases prove the existence of the same disease, as far as it is susceptible of proof, by similarity of symptoms, of cause, of collateral circumstances, and of adjuvantia and lædientia; and I can with truth aver, that I have witnessed many more cases which are not sufficiently detailed for the present occasion, but which, without any exception, corroborated the truth of Dr. Bright's proposition. The negative evidence in my possession is too copious to be detailed. It is, however, decisive as to the question at issue. It consists of numerous cases of dropsies, connected with diseased liver, impediments of circulation, or respiration, or general debility, which terminated fatally, in which the urine was examined before death, and found not to coagulate, and the kidneys were found to be free from disease: also cases ending fatally, but unconnected with dropsy, in which the kidneys were healthy, and the urine did not coagulate. This evidence appears to me peculiarly valuable, inasmuch as during the last three years I have anxiously sought every opportunity of examining the kidneys of every individual in whom the urine had been examined during life, and in no one instance have I met coagulable

urine without diseased kidneys, or healthy kidneys with coagulable urine. When I take this, my personal experience, in connexion with the great number of cases recorded by Drs. Bright, Christison, and Gregory, very few, even of the most generally admitted facts in pathology appear to be grounded on such a body of evidence. I have had under my care one case which may be esteemed an exception ; in this the urine was rendered slightly turbid, and threw up a froth when heated to boiling point. On dissection the peculiar granulated structure was scarcely discernible, but one of the kidneys contained within its proper tunic, at its posterior surface, a mass of cancerous structure presenting fungus hæmatodes, schirrus, and medullary sarcoma, altogether about the size of half an orange. This mass did not extend to the pelvis of the kidney, but was closely connected with both the cortical and tubular structure, from which it was difficult to separate it without causing a rupture of the adjacent parts. This occurred in a case of chronic bronchitis and emphysema, terminating in œdema of the lungs, and was unaccompanied by any complaint of pain or uneasiness in the part. In the other kidney there was an unusual hardness of the mamillated extremities of the tubuli, and an indistinctness in the striæ, exhibited by them on a transverse section, the cortical structure of this kidney being very little altered from its usual appearance. In this case the slight coagulation was probably produced by the cancerous disease now mentioned, which being closely connected with the interior of the kidney, caused irritation, and consequently a morbid secretion.

Some other combinations of circumstances deserve to be noticed. In a case of acute nephritis, in which both kidneys were filled with abscesses, and in which the urine contained a purulent deposit, there was no coagulation by heat, hence (as far as one case can prove) it appears that coagulation does not belong to suppurative inflammation of the kidney. In another case one kidney was filled with abscesses and the other contained the grey granulation. In this the urine corresponded to

the state of both kidneys, by presenting a purulent deposit, and also coagulating. In a third case, the substance of one kidney was entirely absorbed, being almost reduced to a bag, formed by its investing membrane and pelvis, in consequence of tumors formed within its ureter, which prevented the passage of the urine into the bladder, and by pressure caused absorption of its substance, while the other kidney was enlarged to double its natural size, and deformed in shape by a large deposition of the grey substance, and in this case the urine was light colored and coagulated.

It appears from the experiments of Dr. Christison, that the urine in those cases is of less specific gravity than healthy urine, and that the urea is always diminished: the quantity rarely exceeding one-half, and in some cases amounting only to a fifth of that in health, whilst he, at the same time, has proved its existence in the serum of the blood. This is confirmed by the observations of Prevost and Dumas, who found in their experiments on animals, that when the kidneys were extirpated, urea appeared in the blood, thus proving that this substance is not *produced* but merely *eliminated* by these organs. When an injection is thrown into the artery, even in the most successful manner, it will not penetrate into the greyish deposit. The cortical portion of the kidney is the chief seat of the deposition, yet we sometimes find it filling up, and encroaching so much on the other part that the tubular portion is limited to small insulated portions, and in these cases the tubuli increase in density, and become more confused together the nearer they approach their termination in the mamillated processes. In some of the most acute cases I found the lining membrane of the pelvis and upper portions of the ureters in a state of the highest vascularity, resembling crimson velvet. The changes produced on the size of the organ are remarkable, and in my observations appear to follow this rule, that in the more recent cases the kidneys are enlarged beyond the natural standard, while in long confirmed cases they are reduced in size, and become hard in proportion,

the cortical structure appearing to be removed and replaced by the grey deposit.

The examination of the urine in this disease must be conducted according to one fixed rule, otherwise we shall constantly meet with apparent contradictions. The urine should be that which is passed in the morning before breakfast. It should not be examined till it has cooled. It then is usually of a pale citrine colour, semi transparent or translucent, but not transparent like healthy urine, and at the bottom of the vessel there is an opake, whitish cloud consisting of the mucus of the urinary passages, and differing from healthy mucus by its greater density and opacity; while in other cases it differs from the healthy state by containing no mucous cloud. On heating this urine in a spoon, over the flame of a candle, white coagula are formed in those portions of the fluid next the metal long before the heat has advanced to the boiling point, and when the heat is continued afterwards the coagula become more firm and distinct. The lesser degrees of coagulability are signified by it not taking place till the fluid has boiled, or till some of it has been evaporated, by no coagula forming, and the fluid being rendered merely turbid, and, lastly, by throwing up a froth when boiled, which appears to be produced by the smallest quantity of albumen than can satisfactorily be tested by heat.

I may here mention incidentally, that I use this mode of examining urine in other diseases beside dropsy, and without any expectation of meeting albumen. When urine with a copious sediment occurs, and it is desirable to ascertain whether it consists of uric acid and the urates, or of the earthy phosphates, I pour off the clear urine, and heat in a spoon the sedimentous urine which remains at the bottom. If the sediment consist of uric acid and the urates, it becomes perfectly clear before the heat is raised to boiling point, and the sediment is restored to exactly its former state on cooling. If the sediment consist of the earthy phosphates no such changes can be produced.

The quantity of urine in this disease is variable, being not remarkable for scantiness, as is the case in other dropsical diseases. On the contrary, in most cases it is nearly equal to the drink, and in some cases exceeds it, approaching in this respect to the diseased secretion of diabetes.

The state of the skin is one of the most important facts connected with the disease. In all my cases perspiration was extinct, except in a few in which it occurred in the head, or in a transitory manner in the palms of the hands. When the perspiration was restored, in every instance a removal of the dropsical swellings immediately followed. As this part of the subject, however, leads directly to the plan of treatment which I have to recommend, and which differs from that hitherto adopted, I shall postpone this, along with the consideration of the other symptoms of this remarkable disease, to the next opportunity.

(To be continued.)

ART. XXIII.—*A Practical View of the present State of Vaccination.* By HENRY MAUNSELL, M. D., Superintending Accoucheur to the Wellesley Female Institution, Assistant Physician to the Magdalen Asylum, and to the Institution for Diseases of Children, &c. &c.

A VERY limited experience must be sufficient to expose to any thinking person the fallacy included in a supposition that the difficulties and perplexities of a practitioner are chiefly to be met with in the more dangerous and rare cases of disease. Yet into this error does the student, almost universally, and occasionally even his teacher, fall. To this source also we are to trace the extraordinary anxiety exhibited in the hospitals respecting hazardous operations, or those solitary and unusual maladies which now and then enliven the dulness of the ordinary routine of infirmities. It is in such a dull routine, however, that professional knowledge and skill are afterwards to be chiefly

exercised, and the young practitioner will soon be painfully convinced that though he may seldom have occasion to tie a large artery, or treat a case of hydrophobia or tetanus, his comfort and advantage would be often materially promoted had he been acquainted with the common forms of dyspepsia, or the never-failing accidents of dentition. To no subject are these remarks more appropriate than to that which we are now about to consider; there is none which more frequently solicits our attention, and yet none more universally neglected, both by students and practitioners. Were we to inquire at the present day from the crowd of young men, who, having completed their studies, are on the point of entering upon the duties of practice, I have little doubt that not more than one in ten of them would be found acquainted with even the processes of vaccination, and that a still smaller proportion would have any knowledge of the merits and bearings of the many contradictory views that have been taken of this question during the last five-and-thirty years. Imperfect knowledge in matters of this kind is, however, upon many accounts, to be regretted. In the first place, as affecting the character and interests of the individual, the cowpox controversy is one of the few questions in medicine upon which technical information is frequently sought from us by persons not of the profession, and is also one into the discussion of which they can enter upon nearly equal terms with ourselves. Now, according to the principle usually acted upon, that of judging of medical skill by a small sample, our reputation must obviously be in jeopardy, if we cannot, at least, accompany the man of education in his investigations upon doubtful points, and promptly satisfy by a direct appeal to experience the superstitious scruples often existing in the minds of the more ignorant. Again, the question itself is of peculiar interest, as involving some of the most curious points of pathology, and affords a field for observation still far from being completely explored. Of the importance of the subject as a branch of medical statistics it is scarcely necessary to speak; vaccination has become so general throughout the world, and its results

may now be studied upon so grand a scale, that they must of necessity form an element in every theory of population. I hope, however, I may be excused for hinting at the advantages that must accrue to us and our profession from a cultivation of inquiries thus mixed up with the great interests of mankind. Useful and honorable as the art of medicine must always be esteemed in the hands of an honest practitioner, it is only by the extension and generalization of its principles, so as to embrace the interests of large masses of society, that it can ever justify its claim to the dignity of a science. The longest and most extensive private practice is, after all, but a series of services to individuals, usually forgotten as soon as rendered, but the application of private experience to the enlargement, in the smallest degree, of the stock of knowledge upon the subject of public health, entails at once a debt upon the whole community. The claims, then, upon our knowledge of vaccination being of every day occurrence, and there being no single book, of which I am aware, that could be consulted for general information respecting it, I think, should the attempt be successful, that it will be doing a service to many practitioners to present to them, within a narrow compass, a practical view of the present state of opinion upon the subject; with, at the same time, a sufficient account of the simple but delicate processes of inoculation, and the numerous causes, signs, and effects of failure.

From his residence among the dairies of Gloucestershire, Dr. Jenner became acquainted, at a very early period of his life, with traditionary accounts of the security afforded against small-pox, by the casual introduction into the system of a disease occasionally prevalent among the cows in that county. The description of the original disease will probably be best given in his own words. "It has obtained," he says, "the name of cow-pox. It appears on the nipples of the cows in the form of irregular pustules. At their first appearance they are commonly of a palish blue, or rather of a colour somewhat approaching to livid, and are surrounded by an inflammation. These pustules, unless a timely remedy be applied, frequently

degenerate into phagedenic ulcers, which prove extremely troublesome. The animals become indisposed, and the secretion of milk is much lessened.”* From these pustules infection is soon communicated to the hands of the milkers. Inflamed spots appear about the joints and extremities of the fingers; these assume the form of circular vesicles, with elevated edges and depressed centres, and of a “colour distantly approaching to blue.” From the irritation and friction to which the vesicles are usually exposed, they most commonly ulcerate, and often pass into phagedenic sores. When this is the case and the points of infection are numerous, considerable fever and disturbance are excited in the constitution. The axillary glands become inflamed, and there is headach, quick pulse, rigors, &c. Reasoning from a great number of individual instances which fell under his notice, and from the general opinion of the country, Dr. Jenner came to the conclusion that persons affected in the manner described, became insusceptible of the infection of small-pox. In a happy hour the idea struck him that it might be possible to extend the protection, by the artificial communication of the disease from one individual to another; and accordingly on the 14th of May, 1796, he made his first vaccine inoculation. The subject was a boy named James Phipps, and the matter was procured from a sore on the hand of Sarah Nelmes, a dairy-maid, who had been infected casually in the course of her occupation. On the 1st of July following, the experiment was tested by inoculating the boy with variolous matter, taken directly from a pustule. This was again repeated after some months, “but no sensible effect produced on the constitution.” Similar experiments were tried upon others; and in June 1798, Jenner published his first work upon the subject. His hypothesis at this period was, that cow-pox and small-pox were modifications of the same disease, and that the origin of both was to be found in the cutaneous inflammation to which horses are subject, and which, when it affects their heels, is

* Inquiry, &c. 3d Ed. p. 4.

termed *grease*. He conceived, however, that although a disease resembling cow-pox might be communicated to a human subject directly from the horse, still it failed to afford protection unless it had intermediately passed through the system of the cow. In every instance he thought the disease in the cow could be traced to infection, either from another animal of the same species, or from the matter of *grease*, communicated by the hands of a milker. By after observations it has been ascertained that the *grease*, at its commencement, and before its characteristics have been destroyed by friction, is a vesicular eruption, very similar in appearance to that which occurs upon the nipples of the cow. It is also stated that Mr. Gardner succeeded in producing the vaccine disease in the cow by a direct inoculation from the eruption in question; and that Dr. Loy, and Dr. Sacco of Milan, were able to produce it, from the same source, directly in the human subject.* In Jenner's "Inquiry," and indeed generally in the early stages of the investigation of cowpox, we find the term *pustule* applied to characterize its form. The disease, however, is strictly vesicular,† but the mistake was owing to the peculiar circumstances under which it was usually observed in the cow; from its situation upon the nipple, never being allowed to run its course uninterruptedly, and the natural inflammation being usually much increased by friction. When the infection was communicated casually to the human subject, a similar interference with its progress almost invariably occurred, and in the first cases of inoculation was not sufficiently guarded against. On this account a very considerable febrile disturbance was frequently excited in the system; not by "the first action of the virus," but by the subsequent ex-

* Life of Jenner, by Dr. Baron.

† It may be well to keep in our minds the strict definitions of these two forms of cutaneous eruption:—"VESICLE; a small orbicular elevation of the cuticle, containing lymph, which is sometimes clear and colourless, but often opaque and whitish, or pearl coloured. PUSTULE; an elevation of the cuticle, with an inflamed base, containing pus."—Willan.

istence of corroding ulcers, and this indisposition was erroneously considered necessary to the success of the inoculation. Another error consequent on the supposition of the pustular origin of the eruption was the employment of purulent matter or ichor from an ulcer for the propagation of the disease. The sagacity of Jenner, at a later period, discovered both of these mistakes; he continued, however, to the last to apply the term pustule, and has not in any part of his works given a very satisfactory account of the appearances and progress of the complaint, so that it was some time after the discovery before its exact characters were ascertained and recorded. In describing these I shall avail myself freely of the descriptions given in the papers of the National Vaccine Board, and of those contained in Dr. Labatt's excellent address to the Medical Practitioners of Ireland.

About the third or fourth day after vaccination a small red pimple is formed on the site of the operation. This is hard to the touch and slightly elevated; if it be examined through a magnifier a slight efflorescence will be seen to surround it, and sometimes a minute vesicle will be discovered on its apex. The tumor gradually enlarges, and about the fifth or sixth day the vesicle becomes apparent to the eye. It is circular in its form; elevated at the edges, but with a depressed centre; and when at its greatest size, is sometimes indented by one or two concentric furrows, resembling, to use the simile of Mr. Bryce, a worm coiled under the skin. It goes on increasing in size till the tenth or eleventh day, when it is usually about four lines in diameter. The size, however, varies according to the mode of inoculation; if it has been performed by puncture it is generally small; whereas, when several scratches have been made, two or three vesicles frequently form, and subsequently run together. The colour of the vesicle is at first a light pink; sometimes with a blueish shade, which gradually changes to a pearl colour. The centre is darker than the margin, which is firm, turgid, and shining. Internally the vesicle consists of numerous

little cells, filled with clear transparent lymph, and, according to Dr. Willan, communicating with each other. I should think, however, from the difficulty experienced in evacuating the lymph, that the communication is at all events not very free. The quantity of virus varies considerably in different vesicles, and will usually be found to possess activity in an inverse proportion with its quantity. Dr. Joseph Clarke suggested to Dr. Labatt, that this might probably be accounted for by supposing the increased quantity of fluid to depend, not upon an increase of the specific virus, but upon a discharge of serum excited by the mechanical irritation of the part. On the eighth or ninth day there is formed round the base of the vesicle an inflamed ring, which spreads rapidly, and about the tenth day forms an areola of an inch and a half or two inches in diameter. This areola is intensely red, and is accompanied with some degree of tumefaction and hardness. The redness continues for a day or two, and then begins to fade, generally from the centre to the circumference, sometimes forming two or three concentric rings. After the tenth day the vesicle begins to decline; the centre first turns brown, and the whole gradually changes into a hard, smooth crust, of a dark mahogany colour, having, like the vesicle, a concave surface. About the twentieth day the crust falls off, leaving a permanent circular cicatrix, a little depressed, and marked with small pits, probably equal in number with the cells of which the vesicle had been composed. The vesicle in very young children sometimes appears a little earlier than has been described, more frequently, however, the deviation is to a later period. In some instances I have known it to remain dormant for ten or twelve days, in others, Dr. Labatt has observed it bearing the characters of an ordinary phlegmon until the eighth, tenth, or twelfth day, when it assumed the regular vesicular appearance. In all these cases, if the subsequent stages be regular, slight deviations as to time are of no moment. The progress of cowpox is sometimes suspended by the intervention of other diseases, and after their removal, proceeds regu-

larly with its usual marks. Dr. Jenner relates two cases in which the vesicles advanced to maturity, during the existence, in one instance, of scarlatina, and in the other of measles; the areola, however, did not appear until these diseases had subsided. When the vesicle has advanced through all its stages, to the formation of the hard crust, local irritation will sometimes occasion the formation of pus; this, however, is by no means to be regarded as a regular part of the process, and may usually be prevented by preserving the part from injury. During the early periods of the history of vaccination, considerable stress was (as has been already observed) laid upon the constitutional affection. Since, however, the nature of the disease has been more perfectly ascertained, and more attention paid to the preservation of the vesicle from injury, it has been found that the general symptoms are usually very slight, often scarcely perceptible. They commonly occur from the 7th to the 11th day, and consist in restlessness, slight shiverings followed by heat, with thirst and headach. In infants there is, occasionally, sickness and vomiting, and the child is peevish, or drowsy and oppressed. Eruptions are not usual concomitants of vaccination, but frequently, in children, a slight form of strophulus will be observed. As the sympathies of the skin are so active in these subjects, it is of course not easy to determine whether the rash be a consequence of the infection, or an accidental occurrence.

One of Dr. Jenner's main positions was, that a constitutional as well as a local affection should follow the inoculation of cowpox, in order to insure to the patient the full amount of protection. From the extreme slowness of the febrile symptoms, it is often impossible to declare, upon their evidence, that any constitutional disease has been felt, and it therefore becomes a desideratum to have some sure test of the general affection of the system. According to the instructions of the Vaccine Board, we may be satisfied that this has taken place, "when the progress of the vaccine vesicles has been regular and complete," and it is, no doubt, *primâ facie* evidence to that effect. In the

following case, however, which occurred under my own eye, the local disease was so regular, although not absolutely complete, in its progress, as to appear to me to furnish grounds for doubting the *invariable* correctness of this conclusion. A child, four months old, was vaccinated, and had two well-formed and perfectly regular vesicles ; from one of which, on the eighth day, six other children were infected. On the ninth day the child was very feverish, and on the tenth small-pox pustules appeared. These ran their regular course, maturing about the ninth or tenth day from their appearance, and having the characteristic depression of centre. The six children inoculated from the vaccine vesicle, had the vaccine disease perfectly and favourably. In this case, as the small-pox was not modified, I should be disposed to infer, that the constitution was not affected by the vaccination, although the vesicles were sufficiently mature to afford virus capable of exciting a perfect disease in six other individuals. An analogous case is related by Mr. Dawson, in the Transactions of the College of Physicians, London, vol. iii. p. 385, in which small-pox pustules upon two children furnished matter for the successful inoculation of nineteen persons, although the children themselves suffered no fever, nor eruption of pustules, and in a few days afterwards, upon a second inoculation, took the disease regularly. Instances of local small-pox pustules without fever, occurring in persons much exposed to infection, but who have had variola before, may be found in the works of Huxham and many others, and these have been sometimes found to be capable of communicating the disease by inoculation. Notwithstanding, however, “ these loops to hang a doubt upon ” in individual instances, I am strongly inclined to think, that there is a fair presumption of the constitution having been properly affected, whenever the local disease has gone through the regular course exactly as it has been described above, with perfect areola, cicatrix, &c. At the commencement of the vaccine inquiry, small-pox inoculation was employed as the criterion of a constitutional infection of cow-pox ; at present it is fortunately difficult to pro-

cure variolous matter for the trial, and even were it always at hand, the risk of disseminating contagion would render its use unjustifiable. When any shadow of doubt exists as to the efficacy of a vaccination, we should, of course, always repeat the operation, but it is not to be expected that in every successful case, the constitution will be insusceptible of a re-vaccination. Very frequently, the secondary insertion of virus will be followed either by an erysipelatous inflammation of the arm, or by an irregular vesicle, quickly running to a termination, and generally without an areola or permanent cicatrix. Jenner, however, has observed and recorded cases, in which both casual and inoculated cow-pox occurred twice and even thrice in the same individual :* it was also his opinion, that vaccination occasionally took effect perfectly after small-pox. From these facts it is plain, that re-vaccination cannot completely satisfy us as to the success or failure of the first operation : the local disease may appear a second or third time, or perhaps much oftener, with its characters so well marked, as to furnish, at each repetition, only an additional cause of doubt. Owing, however, to the ingenuity of Mr. Bryce, we have a test of the constitutional affection, the validity of which, when it is properly executed, has not, I think, yet been successfully impeached. Reasoning analogically from some experiments upon the inoculation of small-pox, Mr. Bryce was induced to make similar trials with vaccine matter, and found “that if, during the regular progress of cow-pox, a second inoculation be performed, about the end of the fifth, or beginning of the sixth day after the first, (i. e. between thirty-six and forty-eight hours before the areola of the first begins to appear,) the

* I had an opportunity lately, through the kindness of Dr. S. Cusack, of seeing a family of four children, who had been vaccinated at the Cow-pox Institution of this city, and subsequently re-vaccinated by Dr. C. In one of them the operation entirely failed ; in two, one of whom was a girl of fifteen, irregular vesicles were excited, and in the fourth, a child three years old, a perfect disease, with an areola, followed. In all the children the cicatrices were perfect.

affection produced by this second inoculation, will be accelerated in its progress, so as to arrive at maturity, and again fade at nearly the same time as the affection arising from the first inoculation ; and that this will take place, although the constitutional affection be so slight as otherwise to pass unnoticed." If we take matter, for example, on the fifth day after a successful vaccination, and insert it into the opposite arm, this second operation will be followed by a minute vesicle on the third or fourth day, being the eighth or ninth from the date of the first, and will be immediately afterwards surrounded with an areola, becoming, on the fifth day of its own existence, an exact miniature of the first upon its tenth day : both will have finished their course at the same period, that being usually the thirteenth day from the first inoculation, and eighth from the second. The rationale of the acceleration which thus takes place in the progress of the second vesicle, may be explained in a few words : the phenomena of the ordinary cow-pox after the eighth day, or in other words until the appearance of the areola, are strictly local ; when this appears, we may look upon it as a visible sign of the specific fever, (or perhaps we should rather say action,) being in operation in the system, and as a consequence of this general action, we find that a specific areola appears around any local vesicle of the same disease that may at the time actually exist upon the surface of the body, although that vesicle may not be in existence sufficiently long, according to the known laws of the disease, to be itself the cause of this phenomenon. The proper time for putting this test in practice, has been mentioned to be from thirty-six to forty-eight* hours before the appearance of the first areola ; this is the latest period at which we can expect it to succeed, " as it is necessary that the secondary affection may have proceeded some length, and that a small vesicle containing virus, may have

* This, in ordinary cases, will be on the sixth day, but where the first vesicle has been slow, we must, of course, defer the second operation.

been formed by it, before the constitutional action from the first inoculation begins, otherwise no areola, but merely a slight degree of hardness will take place from the second puncture.”* We defer it to the latest period, in order to afford the strongest possible contrast between the progress of the two inoculations. In estimating the value of this test, it is to be recollected, that from unskilfulness in the performance of the operation, or from some other accidental cause, the second vaccination may not take effect at all ; with common care, however, this is unlikely to happen, as, by taking the virus from the first vesicle, we are sure of its being in the very best state for communicating the disease. Upon the whole, I think it is a plan which should, if possible, always be adopted, at least in private practice, for I am aware, that in this country it would be very difficult to procure in public institutions a sufficient number of attendances on the part of each patient, to enable us to carry it properly into effect.

Having considered the disease as it exists, in its most perfect state, it will now be well, before entering upon the much disputed subject of its value, to attend to the modes adopted for its artificial propagation, and the circumstances requiring attention during the process. First, then, as to the age and condition of the person to be vaccinated ; it is agreed by all writers that the most favorable time for communicating the disease to an infant is between the ages of six weeks and two months, which, as Mr. Marshall† observes, “is prior to the irritation of teething,” and is also subsequent to the extreme irritability of first infancy. Should circumstances require it, however, there is little risk in vaccinating a child immediately after its birth, as has been repeatedly done with safety and advantage when small-pox was near, and sometimes even when the mother was suffering under that disease. It is very desirable that no fever,

* Bryce, 2nd ed. p. 189.

† Popular Summary of Vaccination.

specific or otherwise, should exist in the system at the time of vaccinating, and also that the surface of the body should be free from eruptions, as in either case the local disease will probably be imperfect, and the constitutional affection be very likely to be suspended, or perhaps altogether prevented. It has been observed, however, both by Jenner and Bryce, that chronic eruptions are sometimes benefited by the introduction of the vaccine disease, and their existence is not sufficient to prevent us from inoculating, although it would certainly be calculated to make us more suspicious of the case, and ought to induce us to repeat the operation upon a future occasion. The probability of exposure to small-pox contagion would of course make us more anxious to anticipate it, if possible, by a milder disease, and indeed I am not aware of any other conditions than those alluded to, either of the body or season, that could make us hesitate about submitting an individual to vaccination. A most important point in the conduct of vaccine inoculation is the employment of active virus, which we can of course only procure from perfect specimens of the local disease. In the early periods of the practice much confusion and disappointment arose from an imperfect understanding of the stages of the affection, and some mischief was done before Jenner discovered the necessity of always employing matter in a limpid state. Later observers all pretty well agree in recommending the virus to be taken, not merely when in a limpid state, but before the areola has begun to form, and accordingly the vesicles are now almost universally opened for infection on the eighth day. If the progress of a vesicle be slow, but at the same time regular in other respects, we may safely employ matter taken a day or two later, provided the areola has not appeared. Having selected a vesicle at the proper period, we make, with the point of a lancet, three or four slight punctures in its elevated margin, from which minute drops of transparent lymph will soon be observed to exude. This may be either taken upon the lancet, and at once inserted into the skin of another individual, or may

be collected and preserved for future use.* In the preservation considerable attention is required, in order to prevent a destruction of the specific properties of the virus, either by decomposition or by exposure to the action of the atmosphere. To effect these purposes various contrivances have been devised: one of the best is to receive the lymph upon a small square of glass, allow it to dry, and then covering it with a similar piece of glass, fold both up in a portion of moistened bladder or gold-beaters' skin. For more immediate use it may be taken upon thin pointed blades of quill or ivory, these should be charged with lymph two or three times, being allowed to dry between each, and then enclosed into a packet with gold-beaters' skin. When it has been desired to keep the virus for a considerable length of time, it has been allowed to ascend from the punctured vesicle into glass capillary tubes, or into glass tubes with bulbs, the air having been rarified in the latter by the application of a lighted taper: in either case the tubes are to be hermetically sealed immediately on their being charged with matter. Mr. Bryce ascertained that although the fluid found in the vesicle after the formation of the areola seldom produced a perfect disease, still the dry crust of a mature cow-pock always succeeded. He explained this apparent anomaly by inferring that the crust is actually the limpid virus in a concentrated state, and that the fluid occasionally found in the vesicle, after the crust has begun to form, is merely the product of irritation, and not specific. At all events a solution of the crust is found to produce a true cow-pock, and by keeping it dry in a well stopped vial its activity can be preserved to a very extended period.

We may now consider the manner of communicating the infection, which, in every possible instance, should be done with liquid virus taken directly from a vesicle. The best site for the operation is over the insertion of the deltoid muscle, as

* If it be not convenient to employ the virus immediately, we may keep it on the lancet, but only for a few hours, as the latter very soon rusts.

being the part of the arm least likely to be disturbed by muscular action. It may be performed either by scratch or puncture; the last by stretching the skin, and introducing the point of the charged lancet obliquely between the cuticle and cutis, keeping it in the wound for a few seconds, and then wiping it repeatedly over the puncture. In the insertion by scratch, which I think much preferable to the other, and which, when well done with fresh lymph, scarcely ever fails, a very blunt, but clean lancet answers best; this should be charged with virus in the manner already described, and its edge then drawn repeatedly, but very lightly, over the cuticle, so as to make five or six scratches, each about the eighth of an inch in length. Upon these the lancet should be rubbed until the lymph has been completely wiped from its point. When done properly no blood should flow from these scratches, they should merely become red, like those accidentally made with the point of a pin. They require no application, and by exposure for a few minutes to the air, the small quantity of serum which exudes from them becomes hardened into a thin scab. At least two points of insertion should always be made, and by some it is recommended to make two in each arm. This, however, is unnecessary, unless we require a large stock of infection, and the chances of the vesicles being preserved entire, will be much diminished by the attentions of the nurse being divided between both arms. At all events one vesicle ought always be allowed to run its course entire, and when only one point of inoculation has succeeded, that should not be punctured for the supply of virus. According to the hypothesis already stated, of the disease being strictly local at its commencement, we may conceive it possible to prevent the constitutional affection by removing the lymph, on the absorption of which its excitement is altogether dependent. When, instead of the recent infection, we have to employ that which has been preserved dry upon glass, we must take upon the point of a lancet the smallest possible portion of *cold* water, (a very low degree of heat with moisture is sufficient to decompose the virus,) and

rub it on the lymph until the latter is completely dissolved. The solution is then to be collected on the lancet, and used precisely as the recent matter. When employing points of ivory, or other material, we must first make a slight oblique puncture with a lancet, and into it insert the point, which is to be allowed to remain for a minute or two, and then to be wiped frequently over the puncture. When capillary, or other tubes are used, the matter must be expelled from the broken tube with a blow-pipe, and then inserted in the same manner as if it were recent. Crusts, as recommended by Mr. Bryce, are prepared for use by solution in a drop or two of cold water. Lancets employed in the operation, it is scarcely necessary to say, should be kept perfectly clean and free from rust, as they might otherwise produce sores which would materially interfere with the disease we wish to establish. In performing the operation the great cause of failure appears to me to be the occasioning of a flow of blood; there should be merely sufficient to colour the wounds, more than this must, in all probability, wash away the minute portion of fluid virus usually employed.

Medical treatment is seldom required during the progress of cow-pox; nothing, in fact, is necessary in ordinary cases, except a little attention toward the preserving of the part from friction; when, unfortunately, this cannot be accomplished, inflammation is sometimes excited, which must be treated according to the ordinary rules of surgery. Dr. Jenner's practice in these cases consisted in the application of a drop of Goulard's extract to the broken vesicle, or occasionally a plaster of strong mercurial ointment. With a little care all injury may be avoided, and I have seldom seen the employment of any surgical means more active than a poultice required. As for internal treatment I have never known any thing necessary, excepting, now and then, the exhibition of a mild aperient. In concluding this portion of the subject we must not let it escape our recollection, that there are idiosyncracies of constitution which resist our best directed efforts for the communication of cow-pox, and that a similar circumstance has been observed with respect to small-

pox. When we meet with such a case we must, of course, after a fair number of trials with fresh and active virus, leave the patient to chance ; and after some lapse of time make another attempt, upon the probability of a change having taken place in his system.

The term *imperfect* or *spurious vaccination* is frequently to be met with in books, and has been the cause of no small degree of confusion in practice, although, at the same time, it has frequently afforded the practitioner an excellent asylum (*ignorantiæ* ?) against the storms now and then arising out of failures in the protective power of the vaccine disease. This portion of the subject has received much attention from Dr. Willan, by whom the different appearances consequent upon imperfect vaccination have been divided into three varieties—pustules, ulcerations, and irregular vesicles. Their causes have also been referred, by the same author, to three classes—impurity of the virus, occasioned either by heat, or being taken at a late period, or by exposure to air, moisture, rust, &c. ; 2dly, the system of the person inoculated being under the influence of any fever ; and, 3dly, his being affected with some chronic cutaneous disorder. With respect to the two first varieties we may as well cut the knot, and save much minute and tedious description, by at once referring to the characters of a cow-pock, as already laid down, and which there can be no difficulty in distinguishing from a pustule or an ulceration. Should either of these, then, follow vaccination, it must be considered, not as a variety of vaccine disease, but as much an accidental occurrence as if the slight wound were attended by phlegmon or erysipelas.* With the irregular vesicles, however, the case is different, as they, in many instances, closely resemble the true

* I am aware that Dr. Willan supposed that there was a real *vaccine pustule*, capable, in “a few instances,” of communicating by inoculation the genuine vesicle. I have ventured above to state my own opinion, conceiving that the adoption of it will afford a simpler rule of practice, and remove some difficulty from the subject.

disease, and in some have even furnished virus capable of exciting it perfectly in other individuals ; three sorts have been observed by the distinguished physician already mentioned, which I shall describe pretty nearly in his own words.* The first is a pearl-coloured vesicle, set on a hard, dark red base, slightly elevated. It is globate, and less in size than the genuine vesicle, its top flattened, or sometimes a little depressed, but the margin is not rounded or prominent. The second appears to be cellular, like the genuine vesicle, but is somewhat smaller, and more sessile, and has a sharp angulated edge. The areola in both of these is usually more diffuse than in the regular disease ; in the second it is sometimes of a dilute scarlet colour and radiated. The areola appears round these vesicles, on the seventh or eighth day after inoculation, (sometimes earlier,) and continues more or less vivid for three days, during which time the scab is completely formed. The scab is smaller and lighter coloured than in the regular disease, and falls off sooner, leaving a smaller and less permanent cicatrix. The third irregular appearance is a vesicle without an areola, which usually takes place if the person has previously had small-pox, or is at the time labouring under some fever. The two first forms of irregular vesicles will, no doubt, appear to the student to have no very marked characters by which an inexperienced observer could distinguish them from those of a more genuine nature, and the confusion, I apprehend, will not be diminished, when we find Dr. Willan admitting that they will in some cases afford full security against small-pox, although in others that disease will take place after them, at different intervals, and under a particular form. The true state of the case I believe to be, that the cow-pox is, like other diseases, liable to some slight variations in its symptoms, and that, in many instances, the too enthusiastic partisans of vaccination made use of these to help them out of the dilemma in which the occasional failure of the practice involved them. Whenever small-pox occurred to a person who had been vacci-

* Willan on *Vaccine Inoculation*.

inated, a ready answer to all their doubts was furnished by the supposition of his having been the subject of irregular vesicles. In other instances, as, for example, when the areola is deficient, we must adopt Mr. Bryce's notion, and suppose the disease to be merely local, and not to have affected the constitution. An excellent rule, however, is, in all cases in which a shadow of doubt remains upon our minds as to the efficacy of the inoculation, always to repeat the process, and avail ourselves of the valuable and ingenious test of Mr. Bryce.

In approaching the consideration of the vaccine controversy I am fully aware of the extraordinary difficulties common to it, and every other subject involving in any degree the inscrutable principles of contagion. As we have now, however, an experience of the effects of vaccination in various parts of the world, during a period of thirty-five years, I should hope that without bewildering ourselves in abstruse reasoning, it will be possible to find among medical records numerical evidence sufficient to warrant us in placing our conclusions high upon the scale of medical probabilities. A rank that, it is never to be forgotten, is the very highest that can be obtained for any portion of a science whose data are influenced by the varying and unascertained laws of vitality. Of the importance of any measure that would diminish the ravages of small-pox it is not now necessary to speak, as it has been long since practically acknowledged by the adoption of variolous inoculation. Of the advantages of vaccination over this latter, supposing it to be equally preventive of small-pox, it is scarcely more necessary to adduce proof. We may mention, however, that cow-pox is only propagated by actual inoculation, while every case of inoculated small-pox becomes a new focus for the dissemination of infectious miasmata; that cowpox never terminates fatally, nor ever excites scrofula or other chronic constitutional diseases, but, on the contrary, has been observed occasionally to be beneficial in some cases of obstinate cutaneous eruptions; while inoculated small-pox

not only frequently produces blindness and other deformities, and developes scrofula in the constitution, but has been estimated by Dr. Willan to be fatal in the proportion of 1 to 250 cases, and by Dr. Jurin, in the large ratio of 1 to 50. So little too was the general advantage promoted by this practice, however beneficial it might be to individuals, that it has been ascertained by the calculations of Dr. Heberden, that from the increased exposure to infection the general mortality of small-pox rose, after the introduction of inoculation, from 70 to 95 in 1000.* So much for the personal merits (if we may so speak) of the two diseases. We shall now inquire, first, whether vaccination affords any protection, and if so, to what extent? Secondly, has the present vaccine disease lost any of its properties by having passed through a number of human constitutions? And, thirdly, has the general employment of vaccination been found to increase the mortality of other diseases of infancy?

With respect to the first part of the first query we can have no more conclusive reply than is furnished by the cases recorded in Dr. Jenner's work, and which were made by him the groundwork of his reasonings upon the subject. One of the shortest of these may be quoted in the author's words, and will serve as a specimen of the rest:—"John Phillips, a tradesman of Berkeley, had the cowpox at nine years of age. At the age of sixty-two I inoculated him, and was very careful in selecting matter in its most active state. It was taken from the arm of a boy just before the commencement of the eruptive fever, and instantly inserted. It very speedily produced a sting-like feel in the part. An efflorescence appeared, which on the fourth day was rather extensive, and some degree of pain and stiffness was felt about the shoulder; but on the fifth day these symptoms began to disappear, and in a day or two after went entirely off, without producing any effect on the system." A vast number of cases presenting the general features of the foregoing

* I quote these numbers from the Ed. Rev. vol. ix., not being able, just now, to lay my hands on Dr. Heberden's paper.

were observed by Dr. Jenner and his friends, and form a body of evidence that could not be resisted, at a period when every mind was prejudiced against the new doctrine, and that would now only be weakened by an impertinent attempt at corroboration. With respect to the objections to those cases urged by Mr. Brown of Musselburgh, (the chief opponent of vaccination of the present day,) viz. that the individuals were either insusceptible, or that the protective impression was kept up by continual exposure to infection from the cow, it will be necessary merely to remark, that, as in the instance quoted, many of the persons mentioned by Jenner were for years removed from the influence of cow-pox infection, and that if we suppose them to be accidentally insusceptible, the exceptions will be so numerous, as to become of necessity converted into a rule. An account has already been given of the circumstances under which Jenner put his theory to the test of experiment, the whole, I think, proving as demonstratively as the subject will admit, that the general tenor of the vaccine disease is to destroy the constitutional susceptibility of small-pox contagion. I shall now, merely to show that we are not dependent for proofs upon the observations of others, cite one of those striking examples of protection, many of which must fall under the observation of every person in the constant habit of vaccinating. About four years since I vaccinated with the same virus three children of the same family, and who were in the habit of occupying one bed. Small-pox was prevalent in the neighbourhood, and two of my patients were seized with rigors a few hours subsequent to their vaccination; each had a very severe attack of small-pox; the third, who at night constantly slept between these two, had a perfect vaccine vesicle, and completely escaped the other disease.

In attempting to reply to the second part of our first query, a number of the most disputed parts of the subject will naturally come under our consideration. I shall first examine a few of the most prominent and authentic statements as to the numerical effects of vaccination upon mortality, and in doing so, cannot avoid expressing my regret at the total neglect in which the

important subject of medical statistics is suffered to lie by the government of these countries. In every other civilized state of Europe the medical or political inquirer can obtain from the highest sources authentic records of facts, without which, their doctrines that so especially involve the happiness of the human race are but vain speculations. In England, on the contrary, the only fountain of knowledge is the London bills of mortality, and in this division of the empire we are without even the scanty stream of information which they supply. All that could have been derived from the bills of mortality on the subject of small-pox and vaccination, has, however, been given to the public by Drs. Jurin and Sir Gilbert Blane, and incomplete as it is, affords highly gratifying conclusions, which I shall endeavour to weave in with some of the more accurate records of other states. From an examination of the bills during a period of forty-two years, Dr. Jurin* found that one in fourteen of all who were born died of small-pox; by Frank, Süssmilch,† and Black, the general mortality of the human race from this disease was estimated at about eight or nine per cent. Duvillard states that of 100 born, only four reached the age of thirty without undergoing small-pox, and that the mortality among adults affected was one in seven or eight, but among infants so much as one in three. For the purpose of comparing the effects of small-pox inoculation and of vaccination, with the unchecked effects of natural small-pox, Sir G. Blane‡ has constructed, from the bills of mortality, four tables of periods of fifteen years each, shewing the ratio borne by the mortality of small-pox, to the total mortality. These are as follows:—in the first period, which was that immediately preceding the introduction of inoculation,

From 1706 to 1720 the proportion was 1 in 12.7 or 78 in 1000.

* Account of success of inoculating the small-pox, &c. 1723-6.

† Göttliche Ordnung, &c. Berlin, 1742.

‡ Med. Chir. Trans. vol. x.

In the second and third periods, when inoculation had made considerable progress, the proportions were,

From 1745 to 1759, 1 in 11.2 or 89 in 1000.

From 1784 to 1798, 1 in 11 or 90 in 1000.

In the fourth period, when vaccination had been some years in use

From 1804 to 1818, only 1 in 18.9 or 53 in 1000.

By calculations founded upon these tables, Sir G. Blane has estimated the saving of lives during the latter fifteen years, in London alone, at 23,134, a result very gratifying, but still alloyed by the reflection, that it is but a fragment of the good that might have been done, were it not for our own, almost national, caprice, and childish refusal of the slight constraint upon personal liberty that would accrue from the legal enforcement of vaccination. From Sweden, for example, where the authority of government is interposed in favour of the measure, we are furnished with the following interesting document:

In the year 1779 small-pox destroyed 15,000 persons.*

1784	-	-	12,000
1800	-	-	12,800
1801	-	-	6,000
1822	-	-	11
1823	-	-	37

In Prussia, also, (according to Dr. Casper,†) the most marked advantages have followed the introduction of vaccination. In the years 1820 and 1821 the deaths from small-pox were 3137, in a population of twenty-three millions, making 1 in 7204 inhabitants. In Berlin alone, the average annual number of deaths from small-pox, during the twenty years preceding 1802, was 472: during twenty years succeeding 1802, it was 175, since 1812 it amounted only to 50; since 1817 to 12;

* B. Hawkins on Med. Statistics. p. 143.

† Review of J. L. Casper on Med. Statistics, in *Edinburgh Medical and Surgical Journal*, xxvi. 171.

and in 1821 and 1822, there was only one death from this cause in each year. During the ten years preceding 1823, the deaths from small-pox, compared to every 1000 births, were as nine; before the introduction of cow-pox, they were as eighty-three: whence it would appear, that seventy-four lives in every 1000 were preserved by the practice of vaccination. But it would be superfluous to multiply these statements; the foregoing have been taken almost at random from the chaos of records upon the subject, existing in every journal in almost every language, and surely, to use the enthusiastic words of Blane, these are "benefits which could never have been dreamt of by the most sanguine philanthropist," and which must overwhelm us "with a sense of unrequitable obligation to the individual who first disclosed and promulgated the secret." Such have been the gross numerical results of vaccination, which would appear of themselves sufficient to obtain universal support for the practice. The arguments, however, of the anti-vaccinists, have never been drawn from the only source of any value in an uncertain science—a general average of facts; but have invariably been built upon isolated occurrences, which we shall probably find to be fully entitled to the character of exceptions. At the commencement of vaccination, the new disease was confidently put forward, as a complete and perfect preventive of small-pox, and was implicitly received as such by its partisans. This notion was so far fortunate as favouring the rapid and extensive adoption of the practice, and as such was wisely countenanced by its discoverer. From the cautious style, however, of many passages of his work, it is not difficult to perceive that Jenner, though a parent fond of his offspring, had sufficient of that foresight of difficulties, so peculiarly characteristic of genius, to enable him to perceive, that like every thing human, his discovery was not altogether infallible. Signs of this spirit may be observed in the anxiety which he exhibits to prove, that the occurrence of small-pox, whether casual or inoculated, does not perfectly extinguish in the constitution, the susceptibility to that dis-

ease.* It appears to me obvious, that without wishing, at the time, to moot the question, he perceived that if the possibility of small-pox occurring twice, was once established, its occasional appearance after vaccination, would excite neither surprise nor alarm. In the writings of the anti-vaccinists, this view of the subject was altogether overlooked, and all their conclusions made to depend upon the assumption, that small-pox inoculation furnished a perfect and complete protection against the future occurrence of the disease. That it did not do so, will be proved to the satisfaction of the most sceptical, by an examination of the cases detailed in Jenner's own work ; and those alluded to in Moore's History of Small-pox, and in the 9th vol. of the Edinburgh Review, p. 62, not to speak of the numerous cases scattered through all the periodicals, and those with which the memory of most practitioners will furnish them, either of the actual re-occurrence of small-pox itself, or of those other diseases, as scarlatina, measles, &c. which may be supposed to furnish reasonable analogies. To exhibit the ratio in which small-pox has occurred secondary to itself or to vaccination, and also its mortality under such circumstances, it will be useful to examine some numerical records. In the year 1825,† 419 persons were admitted into the London Small-pox Hospital ; 263 had no protection, and of these 107 died ; two had been inoculated with small-pox, of whom one died ; and 147 had been vaccinated ; among the latter the mortality was 12.‡ During the year

* Inquiry, &c. p. 116.

† Dr. George Gregory, in Med. and Phys. Journal, vol. lv.

‡ The announcement of this mortality excited, at the time, considerable alarm, which was, however, quieted by a report of the Vaccine Board, and a letter of Sir H. Hallford to Mr. Hobhouse, (vide Medical and Physical Journal, *ut supra*,) shewing, from Dr. Gregory's own admissions, that in not more than one of the twelve cases, was there evidence of perfect vaccination. There is also a difference between the tot and the separate numbers, the tot being 419, while $263 + 2 + 147$, make only 412. I have, however, inserted the report, as, although it may be considered one of the most unfavourable that has been ever made upon the subject, the mor-

1818, small-pox was epidemic in Edinburgh, and 556 cases were seen by Dr. Thompson* of that city. Of these, 205 had no protection, and 50 died, or 1 in 4; 41 had previously had small-pox, several being deeply marked; 30 other cases of secondary small-pox were reported to Dr. T. and of the whole 71, 3 died, or 1 in 23; 310 of Dr. T.'s patients had been vaccinated, and in only *one* did the small-pox prove fatal. In Norwich,† during the year 1819, 3000 individuals caught small-pox, of whom 530 died; it was estimated that there were in that city 10,000 persons who had been vaccinated, and that of these 2 in 100 caught small-pox; only six of them, however, had it in a perfect form, of whom two died. The disease also proved fatal to one individual who had previously undergone variolous inoculation. These numbers speak for themselves, and when contrasted with the natural small-pox mortality, of 1 in 5 or 6, loudly and unanswerably proclaim the great advantages of vaccination. It appears, however, that although the mortality of small-pox in those who had undergone cow-pox was very trifling, still a considerable number of the vaccinated actually underwent the disease, but only when variola prevailed as an epidemic, as single inoculation has not been found sufficient to overcome the preventive influence of vaccination. The reader will naturally be led to inquire, why, in the same epidemic, the disease is found to be so mild in the vaccinated, and so severe and fatal in the unprotected? the reason is obscured by the same veil that envelopes the cause of the usually singular occurrence of some diseases, and which, in all probability, shall never be penetrated by human eye. The fact, however, is, that small-pox secondary to itself or to vaccination, becomes very different in many of

tality it shews from small-pox after vaccination is only eight per cent., while that from secondary small-pox is fifty, and that from the uninfluenced disease upwards of forty per cent.

* On Varioloid Diseases.

† Cross on Varioloid Epidemic. Lond. 1820.

of its symptoms from the uninfluenced disease, and it is upon this power of modifying, when it cannot altogether prevent, that the claims of cow-pox as a protective agent, must now be rested. The observations and experiments of Dr. Willan,* enabled him to form some conclusions upon this modifying power, the substance of which it may be useful to state : 1st, inoculations with vaccine and variolous matter, performed upon the same person at the same period, or with an interval of not more than a week, were both found to prove effective to a certain extent, so far as to produce a vaccine vesicle, and variolous pustules, each respectively capable of communicating their peculiar infection to other individuals ; 2nd, that when variolous matter was inserted on the 9th day after vaccination, its action seemed to be wholly precluded ; and 3rd, that when the two diseases took effect as mentioned above, they always modified and restrained each other, an irregular vaccine vesicle being produced ; and a variolous eruption of “ hard, distinct, shining pustules, which have but little inflammation round them, and which seldom mature,” resembling strongly those varieties of variola, called by the older writers “ stone-pox,” “ horn-pox,” “ siliquose-pox,”† &c. &c. It is this modified disease, then, which occurs in almost every instance in which small-pox attacks a person who had previously been the subject of cow-pox inoculation. That a similarly mild form of small-pox sometimes occurs naturally, and in an epidemic form, may be inferred from the descriptions in old works of those eruptions named above. Jenner also mentions an epidemic of a peculiarly mild nature, which spread through several towns of Gloucestershire, and was witnessed by himself. A similar variety was described under the name of pearl-pox by Dr. Adams,‡ who hoped to substitute it for the ordinary sort, by successive

* On Vaccine Inoculation, 1806.

† For an accurate and interesting description, see Thomson on Varioloid Diseases.

‡ Popular View, &c. Lond. 1807.

inoculations from the mildest cases. The mildness, however, appears to depend upon the constitution of the individual epidemic, as it was found by Willan and others, that inoculation from pustules, modified by vaccination, produced, occasionally, the worst forms of the disease. This *modifying* influence appears to be possessed by small-pox itself, and to affect its secondary attacks; it is supposed, however, by Thomson and Bryce*, to be less efficient in this respect than cow-pox, and the same opinion appears to be entertained by Dr. Möhl of Copenhagen,† as he records 31 fatal cases out of 153 of secondary small-pox. Before leaving this part of my subject, I must, (though with extreme reluctance,) notice the remarks of Dr. Gregory, in the 12th vol. of the Med. Chir. Transactions. I confess, in my anxiety to avoid controversy, I should have evaded doing so altogether, were it not that Dr. G. has subsequently informed us,‡ that his paper has excited the favourable attention of the profession; and that the paper itself, from its dubious style rather than its sound arguments, is well calculated to produce an injurious effect upon the minds of casual readers. In the first place then, with respect to the increasing number of cases of small-pox after vaccination; when it is considered that the number of the vaccinated *to take* small-pox is every year increasing, the surprise, probably, will be lessened, and perhaps altogether removed, when we find that Dr. G.'s cases were “after *presumed* as well as real vaccination.” Again as to the *manner* in which variola is modified by vaccination, Dr. G. alleges that neither the eruptive fever nor quantity of the eruption is usually lessened, nor the effect of the poison upon the brain and nervous system rendered less fatal. As to the first assertion, it will be best met by the Doctor's own account of fifty-four out of fifty-seven cases being “discharged in

* Thomson, Op. Cit. pp. 60 and 202.

† De Variolidibus et Varicellis. Copenhagen, 1827.

‡ Medical and Physical Journal, vol. lv.

perfect health *within* fourteen days from the period of their admission.”* In proof of his second position respecting the fatal effect of the modified disease upon the brain he has adduced two cases. One of them, however, is that of a drunken “labourer in lead works,” and the other of death from erysipelas following venesection for ophthalmia in a woman who had gone through small-pox, but in whom (according to himself) “vaccination was not trustworthy.” In three other cases out of the five fatal, he admits that one had no cicatrix, and that the other two had cicatrices large and irregular. Amidst the dark hints of Dr. Gregory the partisans of vaccination will generally find some gleams of encouragement. He tells us, for example, that George Ferriman, who had been inoculated for small-pox, was admitted into the hospital with “*pretty severe*” modified variola, and that with him were admitted his two children, who had been vaccinated, both labouring under a “*very slight*” form of the same disease; and again, that the large majority of his patients had been vaccinated in the country, and “had *large, irregular, and therefore imperfect* cicatrices.”

Another observation was contained in the paper now alluded to, and was more developed in subsequent papers,† which, I fear, has been the occasion of much disturbance in the public mind. It was “that the majority of cases of small-pox, after vaccination, which have occurred at the small-pox hospital, have been persons between the ages of 15 and 21.” Upon this was afterwards built a revival of Mr. Browne’s opinion, “that the influence of cow-pox on the system wears out in the progress of life, and requires periodical renewals.”‡ Mr. B. thought that the influence wore out in six years, Dr. Gregory extended

* By the way, if Dr. G. discharged fifty-four cured out of fifty-seven, it is not easy to understand, by what process of arithmetic he had a remainder of *five fatal cases*. Vide Trans. p. 334.

† Medical Gazette, vol. viii.

‡ Med. Chir. Trans. p. 336.

the period to ten. A brief allusion to Mr. Brown's conception of and practice in the vaccine disease will enable us very shortly to dispose of his share in the argument. He contends, that if you only have a vesicle with an areola you may depend upon the production of whatever effect cow-pox is capable of: again, in his practice he surrounded the punctures with a stripe of flannel, used gentle violence, made the child lie on the inoculated arm, and took no virus until the areola was formed.* Dr. Gregory asserts, that he has not been able to re-vaccinate children under ten years, and that the same age is the earliest at which he has seen small-pox among the vaccinated. He admits, however, that he has met resistance after twenty-five years; and as to the table in his first paper, like many an edged tool, it cuts both ways, having a descending scale from the age of twenty, as well as an ascending one to it. Dr. Möhl of Copenhagen, in some degree advocates the same opinion, at least he thinks that the modifying influence is somewhat weakened by time, but his scale is liable to the same objection as Dr. Gregory's; he found,

Under	3 years	-	-	-	0 Cases.
—	5	-	-	-	14
Between	5 and 10	-	-	-	102
—	10 and 15	-	-	-	173
—	15 and 20	-	-	-	187
—	20 and 25	-	-	-	156
Above	25	-	-	-	21

653

Dr. Thomson found the modified disease to occur, on the other hand, at every period after vaccination, and Jenner, with his usual foresight, “selected in his first work cases in which the disease (cow-pox) had appeared at a very distant period, previous to the experiments made with variolous matter, to shew

* Inquiry, and Edinburgh Medical and Surgical Journal, 1819.

that the change produced in the constitution is not affected by time." The periods he alludes to are from 25 to 53 years, so that I think, if the gentlemen who have taken up the other side of the question have no better proofs than those they have as yet advanced, we may safely set down their allegations as not proven.

Dr. Jenner's hypothesis of the identity of variola and the variolæ vaccinae (to use his phrase) has been already alluded to; whether it be true or false is a matter rather curious than of any practical utility. It will be enough to say, that the present phenomena of the two affections are materially different, and it is probable that an attempt now to trace their affinity would only result in rendering the *obscurum, obscurius*. A novel and interesting idea has, however, been more lately started by Dr. Thomson, viz. that varicella, modified small-pox, horn-pox, swine-pox, stone-pox, &c. are all only varieties of the common small-pox. A modification of Thomson's views has since been proposed by Lichtenstädt* of Breslau, viz. that varicella was originally a mild offshoot from variola, which has become gradually so weakened by transmission, as now to be incapable of producing small-pox; but that it still occasionally arises directly from that disease as at first. Dr. Thomson's hypothesis owed its origin to some inoculations performed by the late distinguished Dr. Hennen, with matter taken from an eruption which appeared upon his son, and was supposed at the time to be varicella. By these experiments eruptive diseases of different degrees of severity, varying between the mildest varicella and severe small-pox, were communicated to several individuals; at the same time Dr. T. observed, in different parts of Edinburgh, natural and modified small-pox and chicken-pox, "co-existing in the same situations, and appearing in their progress to produce one another." A variolous epidemic was existing in Edinburgh at the time, and from the foregoing circumstances

* Hufeland's Journal, June, 1820.

he was led to conceive, that all its various appearances in the different classes of persons whom it attacked, might be produced by the operation of one and the same contagion." On the other hand, Dr. Möhl, of Copenhagen,* has observed varicella at periods when there was no variolous epidemic, and again has seen it to occur sporadically at the same time with, but independently of the other disease. The question appears to turn upon the exact definition given to varicella, and I must confess that no description that I have seen would enable me to form a diagnosis between it and the vesicular variety of small-pox. An able reviewer† has laid down, with a good deal of confidence, what he conceives to be certain diagnostic marks, the substance of which I shall give, but indeed with little hope of their being available in practice. The eruptive fever, he says, in varicella, is slight; Dr. Willan, however, has often seen it attended with convulsions; 2dly, the eruption is vesicular from the beginning, or at least from the early part of the first day, not papular, as vesicular variola always is at first; 3dly, the tubercular basis of the vesicles is absent in varicella; yet Dr. Willan found "the sensation communicated to the finger, like that from a round seed flattened by pressure,"‡ and the reviewer admits that chicken-pox sometimes acquires a tubercular base at a late period, while variola as often loses it; 4thly, varicella is to be known by the thinness and fragility of the covering of its vesicles, and by being found between the skin and the cuticle, while variola always exists in the true skin. With every disposition to acknowledge the talent shewn in the review in question, I cannot but express my opinion, that the foregoing characters are rather the result of meditation in the closet than of observation by the bedside, and that as far as I have been able to see myself, or examine into the opinions of

* Op. Cit.

† Edinburgh Med. and Surg. Journal, April, 1820.

‡ On Vaccine Inoculation, p. 95.

others, the theory of Dr. Thomson appears to me to be still unimpugned.

Having now, I trust, entered sufficiently in detail upon the points embraced by our first query, it is time to return to the other two, which, however, will not require so lengthy a discussion.

The second inquiry proposed was—Has the present vaccine disease lost any of its properties by having passed through a number of human constitutions? The answer must, in a great measure, depend upon the case already made out for the actual protective properties of cow-pox at the present time. In addition, we may mention that it is in the power of every person to satisfy himself that the vaccine vesicle of to-day is, in all respects, an original for the delineations of the same disease given by Jenner in 1798; that we have no analogies in favour of deterioration, e. g. measles, scarlatina, plague, &c. are identical with the same maladies, according to the descriptions of the old authors; and that as small-pox itself has not lost its virulence from time alone, we can have no solid reason for supposing that the same agent could have a material effect upon its opponent.

Our third query was—Has the general employment of vaccination been found to increase the mortality of other diseases of infancy?

The affirmative of this question was advanced by Dr. Watt of Glasgow, in the Appendix to his Essay on Chincough, and in the Edinburgh Med. and Surg. Journal, vol. x., and his views passed current, both at home and abroad, until Mr. Robertson, of Manchester,* detected a fatal error in his calculations. Dr. W. found, from the Glasgow tables, that for six years subsequent to 1782, the deaths, *under ten*, were 53.48 per cent. of the total deaths, whereas in the six years previous to 1812 they were 55.43 per cent. Hence he inferred, that the mortality

* On Mortality of Children, 1827.

of children had not improved, and that as a manifest diminution had taken place through the abatement of small-pox, this must have been compensated by a corresponding increase of deaths from other diseases of children. In his inference Dr. Watt did not take into account the diminution that had taken place in the general mortality, nor the increase of the population; and accordingly we shall find, by referring the infantile deaths to the latter, both as found in Dr. W.'s tables, that in the early period the average annual mortality was one in 26.7, and the deaths, *under ten*, 53.48 per cent.; that is, among every 1000 of the population there died annually 37.45, *of whom* 20.03 were *under ten*; and that in the latter period the annual mortality was one in 40.8, and of the deaths 55.43 per cent. were *under ten*; that is, in every 1000 inhabitants 24.51 died annually, *of whom* 13.58 were *under ten*; shewing, in reality, a decrease of deaths among children to two-thirds of what they were in the former period.* In corroboration of this view we may quote Dr. Casper, who found that in Berlin, during the twenty years before 1799, the deaths under puberty were to the births as 51 to 100, while in the eight years succeeding 1814, they were only as 42 to 100; and that in the first period the deaths from measles and scarlatina were $14\frac{1}{3}$ to 1000; in the second only $12\frac{1}{2}$ to 1000.†

In conclusion, I shall advert to one other point, upon which I conceive a misconception has arisen. It has been asserted, that some writers upon political economy declared themselves hostile to vaccination. I believe they did no such thing, but that the accusation was founded upon the opinion which they expressed, that the limits of increase in population were determined by those of the production of food, and that, owing to the indefinite powers of procreation, the numbers of mankind must

* The *coup de grace* has been given to Dr. Watt's error by an ingenious paper read, last year, before the Glasgow Med. Society, by Mr. Cowan of that city.

† Op. Citat.

maintain a ratio to the quantity of food that is to support them, notwithstanding the havoc of a pestilence or the diminution of mortality produced by a powerful agent of health. As well as I recollect, Malthus has, in his late editions, expressly cleared himself from the imputation; but without at all entering into the doctrine of population, it must be obvious that no man in his senses, treating upon the means of improving the happiness of the community, could advocate the designed continuance of a disease that frequently leaves those who survive its attack burdens to themselves and to society. If the political economist proposes to keep down the numbers of mankind, it must be by checking their production, in the first instance, not by cutting them off prematurely after they have been produced.

BIBLIOGRAPHIC NOTICES.

Notices concerning Works on the Practice of Physic, Surgery, Pathology, and Physiology, recently published in Germany.

(Continued from page 133.)

ONE of the most interesting scientific periodicals in Germany is the weekly medical newspaper published at Berlin, and edited by Dr. Hecker. All the hospital physicians and surgeons of the capital are contributors, and the work is likewise supported by the provincial practitioners, who supply many excellent articles on subjects chiefly practical.

In the Number of the 30th January, 1833, Dr. Kluge has published the following extremely interesting remarks on the effects of iodine in checking salivation, which I give the more willingly as garbled and imperfect accounts of the matter have appeared already in some of our British periodicals.

“Professor Knod Von Helmenstreitt, in Aschaffenburg, was the first who recommended *iodine* in mercurial salivation*. As the syphilitic wards of the great hospital (Charité) in Berlin afford numerous examples of this affection, I determined to give iodine a fair trial, and for this purpose I selected seventeen cases, viz. twelve women and five men, all of whom laboured under severe mercurial salivation. Helmenstreitt's first directions were to dissolve five grains of iodine in two drachms of spirit of wine, to which two ounces and a half of cinnamon water, and half an ounce of syrup are to be added. Of this the patient was to take at first half a table-spoonful four times a day, which dose was to be gradually augmented to two, four, six, or even eight grains daily. His latter directions prescribed two grains, or even more, the first day, which dose was to be rapidly increased.

“Two young women who lost four or five pints of saliva daily, were cured in three days by eight grains. One man and one woman

* Vide Hufeland's Journal, May, 1832.

got well in four days, having taken ten grains. In two men and four women the ptyalism ceased entirely in six days, during which, each had taken from twelve to sixteen grains. In two men and two women the spitting was cured on the seventh day after iodine had been taken to the amount of from twenty to twenty-eight grains. In the latter cases it was, however, remarked, that the great pain of mouth and fetor of the breath were notably diminished after one day's use of the iodine. In two young women the remedy appeared at first to be of little or no use; in both the salivation amounted to three or four pints daily at the termination of the seventh day, and the only advantage gained appeared to be a certain diminution of soreness of mouth.

"One of these patients was then obliged to desist from the use of the remedy on account of some constitutional symptoms, and I looked upon this case as a failure. This conclusion was, however, too hastily made, for the good effects of the iodine began to appear on the following day, and on the third day after she had left it off, that is on the eleventh from the date of its first exhibition, all morbid secretion of saliva had disappeared, and the gums had very nearly recovered their healthy appearance; in short, the patient had recovered, having consumed thirty-four grains of iodine. In the other young woman we stopped the exhibition of iodine on the tenth day, at which time she had taken thirty-six grains, with the effect of diminishing the daily secretion of saliva from five to three pints. On the twelfth day she was well.

"In one girl, the accidental occurrence of erysipelas of the face prevented the continuance of the remedy. The use of the iodine did not produce in any one of these patients any disagreeable or untoward symptoms, and as I kept them all for some time in hospital after the salivation had ceased, I have the pleasure of likewise testifying that the cure was not only safe but permanent."

Such are the interesting clinical experiments instituted on this subject by Doctor Kluge in the Charité, and which encourage us in the hope, that at length a remedy has been discovered for one of the chief objections to the use of mercury in various diseases. If future experiments should confirm these results, one the greatest opprobria will be removed from the practice of medicine, for nothing produces greater annoyance than the sudden excitement of salivation, particularly in females, in consequence of small doses of calomel, or other mercurials, given for various purposes and not intended to produce ptyalism, which, when thus unexpectedly brought on, the practitioner had no certain means of controlling, for it must be admitted that the plans of treatment usually resorted to with that intention, such as leeching the parotids, the administration of purgatives, of opiates, sulphur, &c., or the application of blisters, the use of warm baths, &c., were all ineffectual, and some

of them, for obvious reasons, injurious. If it be true that mercury may be made to affect the mouth more rapidly by means of giving sulphate of quinine to the patient during or after its use, as has been asserted by Doctor Harty of Dublin, there must be some remarkable difference between the effects of sulphate of quinine and iodine on the animal economy, a difference well worth investigating, inasmuch as these remedies are usually considered very similar in their mode of action, and are often ordered indifferently in the treatment of chronic diseases, such as scrofula. As Dr. Kluge observes, the modifying powers iodine exerts on the action of mercury, opens a new field of inquiry in the treatment of the venereal disease, and renders it an object of great interest to discover to what species or stages of syphilis one or both these remedies is adapted.

Doctor Kluge's experiments are of particular interest, when viewed in combination with the great encomiums recently bestowed in France and in London on the efficacy of iodine and deutiiodide of mercury in the cure of syphilis and various other diseases. We have seen that two remedies, usually classed together as tonics, differ most materially in their effects, sulphate of quinine and iodine. The former stops the paroxysm of ague and induces salivation; the latter does not stop ague, and checks mercurial ptyalism. Again, when during a course of iodine, the patient becomes subject to pain in the stomach; this, as Lugol has shewn, is best remedied by sulphate of quinine!

What are the therapeutical relations of another tonic, arsenic and iodine?—The former certainly exerts a powerful influence in controlling ague, and I have seen it produce salivation. Would iodine be useful in guarding against or mitigating its occasional bad effects?—If experience answered in the affirmative, no greater boon could be conferred on the practitioner, who would then be enabled to use long continued arsenical courses in lepra, psoriasis, and various other diseases of the skin, without fear of producing unpleasant or dangerous effects on the constitution.

Strychnine is another tonic which occasionally produces salivation, as appears from the following case:—

William Clarke, a painter, was admitted into the Meath Hospital on the 18th of May, 1832. He had been treated for painter's colic in the same hospital about two years before. The abdominal symptoms speedily yielded to one venesection, which seemed necessary on account of tenderness of the belly, and tobacco stupes, the effects of which were followed up by pills containing compound extract of colocynth and croton oil. On the 22d, he commenced taking strychnine at the rate of one-twelfth of a grain three times a day. When he had taken six doses,

he became salivated. Mr. Costello, who noted his case for me, reported: "That this man never took a grain of mercury in his life; his mouth is not sore with this salivation, nor are his gums softened, spongy, or decayed at the edges; the breath has no fœtor, and the salivary glands are not enlarged. There is only, as he expresses it, a great running of water from his mouth." This salivation gradually diminished on the strychnine being discontinued, and had disappeared altogether at the end of five days, when the strychnine was resumed and continued for twelve days, but without the effect of reproducing the salivation.

Would iodine prove useful as a guard against the bad effects of strychnine?—Were it so, the latter remedy might be given with greater confidence in chronic diseases, such as amenorrhea, in which it occasionally proves highly serviceable. Iodine has been recommended in paralysis; so has strychnine. Would their combination be advantageous? While on the very important but too much neglected subject of the modifying influence one remedy exerts upon another, I may remark that camphor and musk are usually classed together, and are frequently exhibited indifferently in the treatment of diseases, particularly fevers, during the latter stages of nervousness and debility, together with carbonate of ammonia or other stimulating matters.

Now it appears from some very curious and interesting experiments published by Dr. H. R. Göppert,* that a very remarkable and special difference exists between the effects of these substances on vegetable life, a difference so striking, that we cannot avoid inferring the existence of a very great dissimilarity between their effects on animal life. Göppert found that essential oils, carbonate of ammonia, and camphor, all exert a most deleterious influence upon plants, which wither and die when sufficiently long exposed to the action of any of these substances. Musk, on the contrary, does not in the slightest degree impair the health of vegetables, even when it is applied in large quantities and for a great length of time. From this he infers that musk acts more especially on the nervous system, the absence of which protects plants from feeling its influence.

Utility of Iodine in certain Strictures of the Urethra.

Doctor Trüstedt, contributor of many interesting clinical observations to the Berlin Medical Newspaper, has made some

* Poggendorff's *Annal. d. Phys. u. Chemie.* B. 14, p. 245; and *Treviranus' Zeitschrift für Physiologie*, B. 3, lit. 2, p. 269.

excellent remarks upon the employment of iodine in certain cases of stricture. I shall give them in his own words.

“On the 25th June, 1832, a patient was admitted into hospital; he had a gonorrhœa in 1830, and for the last six months laboured under the effects of stricture of the urethra, combined with a very considerable and painful tumor of the prostate, a urinary fistula which opened in the perinæum near the root of the penis, and an extremely large swelling of the left testicle, and spermatic chord, whose tumefaction could be traced to the abdominal cavity. The introduction of the bougie caused excessive pain, and irritation producing an increase of swelling in the affected parts above enumerated; I was consequently obliged to abandon all further attempts at dilatation, and confine myself to an antiphlogistic treatment. When the violence of the inflammation had to a certain degree subsided, I determined to try the effects of iodine, for it struck me that its peculiar effects on the genital system, and its well known influence in producing absorption might render it a valuable remedy in such cases. The patient took five drops of the tincture of iodine three times a day, and rubbed into the swollen parts a small portion of the ointment of hydriodate of potash, morning and evening. Soon after the commencement of this treatment the swelling began notably to decrease, and the testicle and spermatic chord were, in a comparatively short time, reduced nearly to their natural dimensions. The swelling of the prostate now also began to yield, and diminished so much in eight weeks, that a bougie, carefully introduced, occasioned but little pain. The internal and external use of the iodine being continued, the patient's state became gradually better, and from time to time the introduction of bougies was cautiously repeated and their size increased. The difficulty of making water now rapidly diminished, and the patient was at last enabled to pass it in an uninterrupted and tolerably copious stream; the urinary fistula in the mean time closed up spontaneously, and the patient left hospital on the 11th of September, nearly quite cured.

“The happy effects produced in this case determined me to pursue the same plan in a man sixty years of age, who had been afflicted for nearly thirty years by a stricture and urinary fistula, connected with and depending on the stricture. He had in vain consulted the most eminent surgeons in France and Germany. In this case, apparently so inveterate as to be hopeless, the same method of treatment was remarkably beneficial, for in a few weeks the urethra became more dilatable, and the stricture permitted the passage of bougies of an increased size. A cautious perseverance in these remedies produced a notable expansion of the stricture, and in the same proportion he was able to pass water in a fuller stream, and with less irritation and difficulty. In this patient also, I had occasion to observe with pleasure the spontaneous closing of the fistula, and the mitigation of most of his sufferings. The stricture, it is true, although improved, was not cured; he nevertheless had occasion to congratulate himself upon obtaining a degree of comfort much greater

than he ever hoped for, having before tried so many plans of treatment without benefit.

“The advantages of the method of cure I have recommended were still more strikingly displayed in a third inveterate, but less complicated case. The patient was thirty-nine years of age, and suffered, for the last eight years, great inconvenience, in consequence of a stricture, situated about four inches and a half from the orifice of the urethra, and which rendered the passage of water extremely tedious and difficult. I made many and ineffectual efforts to pass instruments, but could not on any occasion succeed in passing through the stricture even the smallest catgut bougie. I therefore desired him to use the iodine, both internally and externally, and in the course of a few days I had the gratification of being able to pass a small bougie. The same remedies being continued, the stricture became more and more dilated, so that the size of the bougies being gradually increased, I could, at the end of six weeks, pass into the bladder a bougie of the natural size of my patient's urethra. He could now make water without pain or difficulty, in an uninterrupted stream of the natural size.”

Corrosive Sublimate Baths in Affections of the Joints.

Doctor Ebel, surgeon to a Prussian regiment of infantry, has published, in the Medical Newspaper of Berlin, some cases of so interesting a nature, that I have thought it better to give them in his own words, than to attempt an analysis of his observations.

“The great and remarkably speedy efficacy of corrosive sublimate baths, as recommended by Wedekind, in obstinate chronic rheumatism, had struck me forcibly in the course of my practice, and finally determined me to have recourse to them in affections of the joints, attended with pain, and originating in or connected with rheumatism. —I am happy to say that the result did not fall short of my expectations. In four individuals, attacked with inflammation of joints, arrived at its second stage, and of such a nature as to threaten disorganization of the joints, a cure, complete and permanent, was effected in six weeks. Before I enter upon the details of these cases, I may mention, that my first efforts were always directed to the removal of the inflammation, by the usual antiphlogistic treatment, both general and local, and that due precautions were observed to prevent all fresh sources of irritation, either from motion or cold, during the cure. When the mere antiphlogistic treatment, sufficiently long persevered in, ceased to be attended with further benefit, then, and not till then, had I recourse to the baths. To the water necessary to make a bath was at first added only half an ounce of corrosive sublimate, but after every third bath this quantity was increased by half a drachm, until we arrived at one ounce, which was the maximum quantity in

one bath. The baths were always heated to about 94° or 95° Fahrenheit, and acted on the skin, producing a strong tendency to sweating, which was encouraged by wrapping up the patient in warm blankets. These sweats seemed to exercise a most beneficial influence on the complaint, and perhaps to the circumstance of their being so profuse we must attribute the complete immunity of every one of my patients from all unpleasant effects of the mercury either on the constitution or the mouth.

CASES.

“ A non-commissioned officer, named Günther, thirty-three years old, during the period of his service had several attacks of ague, and in January, 1831, contracted a gonorrhœa, which was speedily cured. Six weeks afterwards, being on the march between Neisse and Breslaw, he was exposed to very rainy, cold weather, and much bodily fatigue, which gave rise to an inflammatory affection of the inguinal glands on the left side, ending in suppuration and recovery towards the middle of April. In a few weeks after, the patient experienced a sensation of weakness in the left leg, greatest in the morning, and increased by exercise. Deep-seated pains now set in, referred to the hip joint, generally compared to a feeling of *tearing*, sometimes of *sticking*. These pains daily became more intense, were increased by every motion of the limb, and at length, after the lapse of several months, he was attacked by a severe pain in the knee, and from that moment he limped in walking, and moved about with the greatest pain and difficulty. Now, for the first time, he sought advice, and on examination, I immediately recognized an inflammatory affection of the hip joint, advanced to its second stage, and probably of a rheumatic origin. The buttock of the affected limb was considerably flattened, and the line marking the lower edge of the gluteus magnus was depressed nearly one inch below its natural situation. The trochanter major of the affected limb lay somewhat depressed, and more backwards than natural. The distance between the trochanter major and the anterior spinous process of the ileum measured an inch and a half more than on the healthy side, which was likewise the case with the distances measured between the anterior spine of the ilium, the upper margin of the patella, and the malleolus internus, respectively. The glandular and aponeurotic tissues, situated in the neighbourhood of the diseased joint, were inflamed and swollen; the glands were very painful to the touch, and hard. The patient could not stretch out the left leg, except with extreme pain and difficulty, and was quite unable to turn it inwards, or throw the left leg over the right. The pain in the knee had become fixed during the last eight days, and was increased by the least motion of the limb. When he tried to walk, he limped, dragging the affected and emaciated left leg after him, touching the ground only with the ends of the toes, which were turned outwards. The patient was, moreover, somewhat emaciated, and laboured under a slow fever, with evening exacerbations.

"I commenced the treatment by the repeated application of leeches over the diseased joint, and a calomel purgative every second day. In the course of a few days half a drachm of mercurial ointment was rubbed into the neighbourhood of the joint every night, and he got the compound decoction of sarsaparilla internally. On the second day of the treatment the patient used a warm bath, with quarter of an ounce of corrosive sublimate, in which he remained three quarters of an hour; the quantity of the salt was increased in each successive bath. Even after the fifth bath a very great diminution was observed in the pain of the hip joint, and the swelling of the inguinal glands. The patient felt much fatigued after each bath, and always fell into a very profuse general perspiration. After fifteen baths had been taken, we remarked, for the first time, symptoms indicating a decisive improvement, for the elongation of the limb had now diminished fully quarter of an inch, and the pain in the knee had sensibly subsided. The patient's spirits were more cheerful, the attacks of fever milder, and the perspirations after the bath less profuse. The improvement continued progressive, and on the second of December both legs were of the same length, and the pain in the knee had nearly altogether disappeared; he could stretch out the left leg, and raise it up without assistance, and move the foot in all directions; he still, however, felt very weak, although the febrile exacerbations were much less severe. From this day I ceased the mercurial unction, and allowed a more nutritious diet. The baths were now reduced in strength to half an ounce of corrosive sublimate, and he got one only every third day. He took the last on the 15th December. On the whole he used in baths twenty-six ounces, two drachms of the salt. On the 5th of the following January, Günther left the hospital perfectly cured, and able to resume his duty.

"CASE 2.—Joseph Kutsche, a private in the twenty-third regiment of infantry, 23 years old, had been several times attacked with ague, and had narrowly escaped from the collapse of cholera in the January of last year. On leaving the cholera hospital he had the misfortune to lodge in damp quarters, where he caught cold, which fixed in his right hip joint, and every day rendered motion and walking more difficult and painful; at the same time he experienced so great a feeling of weakness in the affected limb, that he was compelled to sit down and rest after a very few steps. He now applied to me for relief; I found that he was somewhat emaciated, and laboured under a considerable degree of fever. The buttock was not flattened, but on the contrary, broad and prominent. All the extensor muscles of the leg, particularly the *glutæus medius*, were tense and painful. The line or indenture marking the lower termination of the buttock was obliterated, and the trochanter major was depressed one inch and a half, while it likewise was removed a little farther forward than natural. The affected limb appeared one inch and a half longer than the other. The leg, comparatively speaking, was not much emaciated, but he could not, without assistance, raise it so as to cross the

other leg, neither could he move it towards the left side in any direction. The pain in the knee was tolerably severe, and in limping along, the patient dragged his leg after him. The tips of the toes were the only part of the foot which he laid on the ground in walking; they were turned outwards and the heel inwards.

“After some preliminary application of leeches, and the antiphlogistic treatment generally, he commenced the use of the sublimate baths on the 10th of March. Although the sweats increased daily after each bath, yet the pain in the hip and knee instead of diminishing rather augmented in intensity; the swelling of the buttock likewise became greater, and the muscles more tense. The duration of the fever, the occurrence of horripilations, and a pulsating pain felt in the hip joint, pointed out the occurrence of suppuration; poultices were consequently applied, until fluctuation was perceptible. An incision two inches long and two and a half deep was then made, at about an inch and a half from the crista of the ilium, and at the same distance from its posterior margin; this gave vent to a large quantity of pus, and much relieved the patient. A sound introduced into the abscess passed far onwards towards the crest of the ilium and the trochanter major, without, however, reaching either of these parts. The neighbouring parts were so swollen and tense, that the baths could not be continued for four days, and instead of purgatives, sedative and diaphoretic medicines were exhibited: the baths were then resumed, and he had afterwards no attack so severe as that just described; on the contrary, indeed, the feverish attacks became less violent, and the sweats after the baths less profuse. On the 27th of March the first well-marked symptom of a decided amendment was observed, for the length of the limb was now diminished by half an inch, the pain in the knee had become less, and the buttock was flatter, and not so tense or painful. The outline of the buttock was now defined by a well-marked line, which, however, was a little lower than natural. The discharge from the wound was healthy, and mixed with a little lymph. Improvement now became more rapid, and the morbid elongation of the limb had disappeared by the 2nd of April. In this case also, once a decided improvement had commenced, the perspirations after the baths began to be less profuse. The incision now become fistulous, discharged merely a small quantity of clear lymph; at the first attempt which he made to walk, on the 2nd April, the patient still limped and dragged the leg after him; the toes, however, were not turned so much outwards, and he put the sole of the foot to the ground. The baths were now ordered every third day, and on the 15th of April all symptoms of the disease had disappeared. He remained some time in hospital to gather strength, and then returned to his regiment, in which he has continued to serve ever since. The quantity of corrosive sublimate consumed in this case amounted to twenty-one ounces.”

Dr. Ebel relates two other cases, one of inflammation of the hip joint, another of the knee; they were both successfully

treated in the manner already described. The reader should bear in mind, that Dr. Ebel does not recommend the corrosive sublimate baths in scrofulous affections of the joints, but in those cases where the agency of some evident cause, such as cold, has produced a fixed inflammation of a joint in a constitution previously healthy, which inflammation may end in disorganization of the joint, unless its progress be arrested by appropriate treatment. As the remedies used in such cases not unfrequently fail, I have thought it right to lay Dr. Ebel's method of treatment before the profession.

Contraction of the Uterus after Death.

The following case, communicated by Dr. Trüstedt, is interesting :—

“A woman who was under the care of Dr. Rudolphi died suddenly, at an advanced period of pregnancy, in consequence of an attack of *febris intermittens apoplectica*. Her death took place about four o'clock, P.M., in an hour after which she was removed from the bed, and placed on some straw on the floor, covered with a sheet. A woman left in the room to watch the corpse, was, about midnight, greatly alarmed by hearing a noise proceeding from the part of the room where the body lay, and immediately alarmed the house, being persuaded that the deceased was coming to life. On examination, a full grown dead child was found between the legs of the mother.”

Lycopodium Clavatum in Urinary Complaints.

Doctor Rodewald of Berlin relates several cases illustrative of the efficacy of the leaves, or rather the creeping stems of this plant, in various urinary complaints, viz.—1st, in retention of urine, attended with gravel or a secretion of pus from the mucous membrane of the bladder; 2ndly, in atony of the muscles of the bladder; 3rdly, in weakness and relaxation of the mucous membrane of the bladder; 4thly, as a diuretic.

In short, Dr. R. applies the *lycopodium* to many of those cases in which we at present order *buchu* or *uva ursi*. As it is an indigenous plant, abounding in various parts of Ireland and England, a trial of its virtues ought to be made. He recommends it in the form of a strong infusion or a decoction; and relates one curious case, in which the use of this remedy cured a morbid irritability of the bladder in a boy seven years of age, who was obliged to pass water every quarter of an hour during the day, and wet the bed frequently during the night.

Colour of the Gums in Ague.

Doctor Bonorden, who has had frequent opportunities of treating ague in the neighbourhood of Minden, has observed, that when the fits have been stopped by means of bark, sulphate of quinine, or other medicines, there is always danger of relapse, as long as the edge of the gums, where they are in contact with the teeth, continues to present a dark red, venous appearance. This state of the gums, depending on venous congestion, indicates the existence of a congested state of the internal organs, and where it is not observed, the practitioner is aware that he has to treat a case that will readily yield to medicine. After the paroxysms have been stopped by sulphate of quinine, *if this state of the gums continues, it will be necessary to guard against a relapse*, by giving occasional doses of the febrifuge for at least three weeks. When, notwithstanding these precautions, the face retains the aguish paleness, and the edges of the gums continue livid, then it will be necessary to have recourse to the muriated tincture of iron. Dr. B. observes, that this symptom is simulated by the gums, when their edges are unhealthy in consequence of the accumulation of tartar.

Fresh Prepared Carbonate of Iron.

Doctor Büchner and Dr. Richter both attest the efficacy of this mineral salt, even in cases of neuralgia, where common, not recently prepared, carbonate of iron had failed. The mode of administering the remedy is as follows: twelve grains of crystallized sulphate of iron are to be mixed with six grains of dried carbonate of soda, and dissolved in half a cupful of water, slightly sweetened with sugar: this dose to be taken three times a day. It is equivalent to five grains of carbonate of iron, and operates as an anti-neuralgic medicine, much more powerfully than larger quantities of the carbonate of iron as sold in the shops.

Subcarbonate of Soda in Bronchocele.

Doctor Klose of Breslaw relates three cases illustrative of the good effects of subcarbonate of soda in the goitres. Two recent cases were cured, and one very old inveterate tumour was sensibly diminished, by the use of a mixture consisting of six ounces distilled water, three drachms of syrup of orange-peel, and two drachms subcarbonate of soda. Of this the pa-

tient takes a table spoonful three times a day ; should it produce a feeling of nausea, this may be averted by chewing and swallowing a small bit of dried orange-peel after each dose. This remedy was originally recommended by Dr. Günther of Cologne, in Hufeland's Journal.

Nitrate of Soda in Common Dysentery.

This salt was first recommended in common dysentery by Velsen, (Horn's Archiv. 1819,) and more lately by Bonorden, who says, that its effects are quite different from those of nitrate of potash, and that it acts specifically on the colon and rectum, diminishing inflammation, and abating spasms of these parts so powerfully, that it invariably cures simple dysentery, when given at its commencement. It is exhibited in barley water, or some mucilaginous decoction, from two to six drachms of the salt being dissolved in six or eight ounces of the latter. Of this one table spoonful is to be taken every second hour. The nitrate of soda acts very mildly as an antiphlogistic, opening the bowels gently, and afterwards producing a determination to the skin. Nitrate of potash, on the contrary, acts as a stimulant on both bowels and kidneys, and consequently makes the dysenteric symptoms worse instead of better.

Superfoetation.

A married woman, twenty-two years of age, was brought to bed of twins in the lying-in hospital at Berlin, on the 25th of January, 1832. The children were both girls, and died in two hours after their birth : their birth took place before the end of the seventh month from the date of pregnancy. One child was white, the other evidently a half caste, as was indicated by the shape of its head and the leaden tinge of its face, hands, and feet, which in colour resembled those who have been tinged by taking nitrate of silver in large doses. The same difference of colour was strikingly evident in the umbilical cords of the infants ! but not in the membranes or placenta. On inquiry it appeared that she was in habits of intimacy with a negro, shortly after or at the time she had conceived by her husband !

Life and Respiration continued after total Destruction of the Brain.

A deformed woman was delivered with the crotchet in 1828. In 1830 she again became pregnant, and it was resolved, after

fruitless trials with the forceps, to effect delivery by destroying the child's head. Doctor Beyer performed this operation, took away both parietal bones, entirely emptied the cranium of brain, and then extracted the infant, which was wrapped in a towel, and laid near the stove. Dr. B. being engaged in endeavouring to extract the after-birth, heard a sort of whimpering issue from the place where the child lay. In about three minutes the child uttered a distinct cry, when Dr. B. opened the cloth, and was astonished beyond measure at finding the brainless infant, breathing, and moving both hands and feet; an occasional cry, and the other signs of life continued for several minutes, when the infant at last died.

Hysterical Aphonia.

Doctor Paschen relates a remarkable and instructive case of aphonia in a young female, of a healthy habit and robust form, who had contracted a violent inflammation of the air passages which left behind it a hoarseness, in consequence of which she could not speak except in a whisper, not audible at more than one or two yards. This state made her shun society, and lasted more than two years, notwithstanding the trial of numerous antiphlogistic, derivative, and antihysterical remedies, and she had abandoned all hopes of cure, when in mounting a ladder she slipped, and fell from a height of about fifteen feet upon the pavement. She lay senseless for about five minutes, when she gradually came to herself, and looking vacantly around her, asked in an audible voice, where am I? The presence of a large contused wound on the occiput showed that this part of her head had come first to the ground. She was bled and recovered without a bad symptom, except an erysipelas of the face, and never after lost her voice!

This case proves in the clearest manner than an inflammation of the larynx and organs of voice, may so affect the nerves of the organ of speech as to produce a nervous aphonia, which may continue long after the original inflammation had ceased.

The effect of the sudden shock resulting from a fall from a great height, was well exemplified in a case, also related in the Berlin Medical Newspaper, in which a man labouring under a most furious paroxysm of madness in delirium tremens, jumped out of a window four story high upon the pavement. He suffered several compound fractures, and was quite in his senses in a few minutes after the accident!

Periodical Aphonia.

A peasant girl, twenty-four years old, had become hysterical immediately after marriage, two years previously. At one period she became cataleptic, and at another had laboured under all sorts of hysterical convulsions, which were not in the slightest degree alleviated by medical treatment. At last her cure seemed to take place spontaneously, and she remained several weeks in apparently good health when she was attacked with a new malady. Speechlessness now came on every day at four o'clock, p. m., accompanied by a feeling of weight about the root of the tongue, and lasted about a quarter of an hour. The tongue was clean and natural in appearance; the pulse during the paroxysm was small, hard, and slow; the features unaltered, the heat of skin natural, and perspiration regular. The patient, while it lasted, could not utter any articulate sound, but occasionally made an indistinct hissing noise; consciousness did not appear at all impaired during the fit, and she ascribed her inability to speak to a feeling of weight in the tongue. The paroxysm went off with a large evacuation of watery urine, accompanied by perspiration and sleep. Ten such attacks had occurred, when Dr. Richter of Wiesbaden was called to see her. He ordered her considerable doses of sulphate of quinine, with immediate good effects, for on the first day the attack returned, but in a mitigated form, and on the second day no trace of it was visible, except a certain degree of debility and fatigue felt at the usual hour of its coming on.

I have no doubt that this was a variety of *febris intermittens apoplectica*.

Epidemic Hemeralopia.

Night blindness has been well described by Mr. Bampfield and Scarpa, and there is an excellent selection from what has been written on the subject in Cooper's Surgical Dictionary, (article Hemeralopia). Scarpa and others have noticed its occurrence as an epidemic, and it is remarkable that it seldom prevails as an epidemic except among soldiers and sailors. This circumstance should lead us to look for the cause of such epidemics, not in atmosphere to which others are exposed as well as soldiers or sailors, but to some occasionally recurring peculiarity in the diet of the latter. In 1832, the 36th regiment of French infantry, quartered at Belfort, in France, had ninety men attacked with hemeralopia, and the 1st regi-

ment of dragoons had twenty men similarly affected. Doctor Kothe gives, in the Berlin Medical Newspaper, a very interesting account of a similar epidemic which in the month of April, 1833, affected twenty men out of one hundred and twenty-four quartered in a certain barrack at Torgau. The description of the symptoms agrees so accurately with that given by Cooper, that it need not be repeated. The disease appeared to subside spontaneously, and seldom required the use of medicines. In most of the cases it was accompanied by an apparently catarrhal inflammation of the eyelids.

What renders stronger the suspicion of this disease being caused by some peculiarity of diet is the fact that it has been sometimes observed in establishments where the children of the poor are maintained and fed. Thus Caspar has remarked it every spring for the last four years in such an institution at Berlin, but only among the children; the grown up persons living in the establishment all escaped. They probably use a different diet. The direct effect of certain articles of diet on the eye has been proved by the well known experiments of Magendie, who found that a diet restricted altogether to matters containing no azote, such as sugar, soon produced ulceration of the cornea and destruction of the eye-ball. In the East there is a popular belief that rice injures the sight, and gives rise occasionally to amaurosis. In this country similar bad effects are popularly attributed to chocolate.

Arnica Montana in Chronic Rheumatism.

My excellent and learned friend Dr. Thümmel, of Berlin, relates several cases which seem to prove that the anti-rheumatic powers of this plant are too much neglected. The virtues of arnica were formerly extravagantly extolled, and it was prescribed in almost every chronic disease; this caused it to be latterly disused. Doctor T. makes an infusion with a drachm or a drachm and a half of the flowers, and six ounces of water. It is allowed to cool in a close vessel, and the liquor is then carefully decanted off, without pressing the flowers. Half of this infusion is taken at bed time, and half in the morning; some warm weak tea may be taken after it, and the patient should at the same time eat a small bit of biscuit to prevent the nausea which the medicine might otherwise occasion. It operates on the skin and kidneys, and appears to be applicable to such cases of chronic rheumatism as we have been hitherto in the habit of treating with the stimulating compound electuary, termed the Chelsea pensioner, or with tincture of guaiacum, spirit of turpentine, &c.

Among other cases related by Dr. Thümmel, one of rheumatic ophthalmia from cold, and one of deafness connected with rheumatism, are especially worthy of observation on account of the efficacy of the arnica.

Tincture of the Seeds of Datura Stramonium.

Doctor Klose strongly recommends this tincture as a narcotic. In preparing it great care must be taken to procure ripe seeds.

Ranque's Remedy for Swollen Breasts.

Every thing which can add to our knowledge concerning the best means to be adopted in cases where the mammary glands become swollen, painful, and indurated, in consequence of the child being taken from the breast, and the discharge of milk by the natural outlet ceasing, must be thankfully received. Doctor Schnur has made an interesting communication on this subject. He was struck by some observations made by Ranque, (Froriep's Notizen,) and determined to try the remedy he recommended.

The swelling of the breast which precedes the formation of mammary abscess, is caused in the first instance by the retention of the milk and the consequent distention of the lactiferous ducts. But this is not the only cause of the local derangement that so speedily follows, for the vascular system of the mammaræ is wonderfully increased* preparatory to and during lactation, and, therefore, when this augmented circulation of the breasts is baffled in the performance of its proper function, the secretion of milk, it often tends to form with great rapidity vicarious and unhealthy products. Hence arises the obstinacy of many such cases, and hence they are frequently not found to be amenable to the common methods of treating local congestions or inflammations. All practical men are consequently obliged to adopt various methods of treatment, and the skilful accoucheur is often enabled by attention and pains to save his patient from the suffering accompanying such affections. Ranque, impressed with certain theoretical ideas which is unnecessary here to discuss, was led to the use of the following liniment:—

* A very curious and interesting fact noticed by Barkow, who has so much distinguished himself by original observations on the comparative anatomy of the arteries, has not yet been copied into English publications: it is that during the period of incubation, the integuments of the belly of the brooding hen is much more vascular than in its usual state, an evident provision for the generation of the necessary heat.

R Extracti Belladonnæ ℥ii.
 Aquæ Laurocerasi ℥ii.
 Ætheris Sulphurici ℥i.
 Ft. Linimentum.

This must be well shaken before it is used. It is to be rubbed into the breasts as high as the axillæ, morning and evening, and the breast must be then covered with fine flannel soaked in the liniment. This proceeding must be repeated every day, until the swelling disappears, which is usually on the second or third day. The æther has a smell which to some is very disagreeable, but they ought to bear this inconvenience if possible, for it adds essentially to the efficacy of the remedy. The subject is of such great importance, that, at the risk of being tedious, I shall give the whole of what Dr. Schnur says on the following cases:—

“ E. M. a Jewess, short and slender, was married when thirteen years old to a husband aged fourteen. Immediately after marriage she became subject to hysteria, and the catamenia grew irregular. On the third year after her marriage she became pregnant, and, arriving at her full time, was delivered of a small but healthy child. She persisted in attempting to nurse the infant, although her breasts were ill developed, and her general health far too weakly to authorize the attempt. Six hours after its birth the infant was applied to the breast, when she experienced flying stitches darting through them, which soon amounted to positive and considerable pain. The circumference of the mammæ now increased in size, and in twenty-four hours it was found impossible to extract a drop of milk from them, either by rubbing, pressing, or drawing them. The breasts had lost their proper elastic feel, their surface did not yield to the pressure of the finger, neither was it hot or red, but like the rest of the skin, it was quite white and blanched; her feet were cold, tongue clean, and bowels gently opened by a saline aperient. The patient tossed about in her bed, and the pain in the breasts were so excessive as to cause her to rave and faint. Her pulse were small, frequent, and contracted, and she was affected with constriction of the chest, and spasms of the muscles of the neck. Before my arrival the attendants had tried inunction with almond oil, the application of bags containing dried herbs warmed, fomentations of chamomile, &c., and were just going to apply a poultice of linseed meal. Under the circumstances there appeared to be an urgent necessity for calming the general nervous irritation, and diminishing the pain felt in the breasts. To effect these purposes nothing appeared better calculated than Ranque’s liniment, and I, therefore, caused it to be applied in my presence. After the flannel had been on one hour, the skin of the breasts became slightly red, and the patient expressed considerable relief. The tendency to fainting now vanished, and the pulse lost its irritable contracted stroke; nevertheless she complained of the smell of the æther,

which, she said, gave her head-ach, and I consequently substituted alcohol in its place. With the diminution of pain the hardness of the breasts likewise subsided, and in forty-eight hours all traces of this local affection had vanished.

“In two other somewhat similar cases, Ranque’s liniment produced the most beneficial effects, although not so rapidly as in that just related. In both the smell of the æther was complained of, but I persevered in its use, being convinced that it contributes much to the efficacy of the remedy in causing that redness of the skin, which seems essential to its action. Although those cases prove that this remedy possesses considerable powers, I by no means wish to assert, that it is applicable to all cases, or that its success is invariable; on the contrary, I am sure that the number of cases to which it is applicable are not very numerous, for it must be recollected, that in plethoric robust women, who had enjoyed a good state of health previously to delivery, antiphlogistic and derivative remedies, such as purgatives, are indispensably necessary, and when administered in proper time they have the best effect, often, although not invariably, enabling us to prevent the formation of abscesses or of induration of the mam-mæ. It is in delicate women, of a lean habit and slender form, subject to hysteria or fainting; persons whose constitutions have been injured by previous illness, hæmorrhage after delivery, or by too frequent child-bearing; it is in such persons that Ranque’s liniment will be found useful. Its composition indeed, consisting of narcotics, combined with stimulants, seems to point out the nature of the cases in which it may prove serviceable.”

Oil of Mustard in Cholera.

In the *Magazin der Ausländischen Literatur*, July and August, 1832, the oil of mustard is spoken of in the strongest terms as a rubefacient and vesicatory. When spread upon soft blotting-paper, and applied to the skin, it produces redness of the integuments *in a few seconds*, and in a very short time indeed induces vesication. The essential oil of mustard is obtained by mixing as much cold water with fresh powdered mustard seed as will mix into a paste; this is to be kept for twenty-four hours, after which more water is to be added, and the essential oil is then to be carefully distilled over with a moderate heat, and as it floats on the water, which comes over along with it, it may be easily decanted off. One word, in conclusion, about the common sinapism; when it is required to produce a very speedy and decisive effect, it should not be prepared according to the formula for making the *cataplasma sinapis* of the Dublin Pharmacopœia. No linseed meal or vinegar should be used; let boiling water be poured in sufficient quantity on fresh prepared mustard powder, and it will answer extremely well. For this practical hint I am indebted to Mr. Barker, of

Great Britain-street, and I have found it particularly useful in the treatment of cholera.

Since the preceding was written, I had an excellent opportunity of trying the effects of iodine in arresting the progress of mercurial salivation, and I am happy to say that the result was favourable.—A man named Michael Kelly was admitted into the Meath Hospital, on the 14th of November last, labouring under pneumonia, affecting a large portion of the right lung, and combined with dry pleurisy. The disease had commenced ten days before, and notwithstanding two venesections, and the exhibition of tartar-emetic, hepatization of the lower portion of the inflamed lung had taken place. The man's situation was critical in the extreme, but his life was saved by cupping, blistering, and above all, by the rapid ingestion of calomel, at first given in scruple doses, and afterwards in smaller quantities. In the course of two days he took seventy-four grains of calomel, latterly combined with large doses of opium. On the third day his mouth became affected, and salivation set in, accompanied by a rapid subsidence of all the dangerous symptoms. Mercurial salivation thus suddenly brought on by large doses of calomel, is invariably profuse and violent, and seldom begins to subside until several weeks have expired. In the case before us it was increasing daily, when, on the 20th of November, I commenced the exhibition of iodine. On the 20th he took three grains, on the 21st and 22nd, together, eight, and on the 23rd and 24th sixteen grains, making, on the whole, twenty-seven grains taken in five days, when it was omitted on account of nausea being caused by the last dose. On the 26th its use was resumed, and on that and the following day he got eight grains more, making a sum total of thirty-five grains. On the 1st of December the salivation had ceased altogether; the mercurial fetor, with the soreness of mouth, were nearly gone, and neither the gums or teeth had suffered in the way they usually do from a violent mercurial salivation. *The most important result obtained, however, was, that the iodine did not produce any detrimental effects on the pleuritic or pulmonary diseases; on the contrary, its exhibition, after the mercury had affected the constitution, seemed to resolve the still remaining inflammation most rapidly.* The same observation applies to a case of violent pericarditis occurring in a gentleman whose life was saved by mercury exhibited by Dr. Brereton and myself. Forty grains of iodine produced no reappearance of inflammation, or any bad effects whatsoever!

ROBERT J. GRAVES.

Embryologie, ou Ovologie Humaine, contenant l'Histoire Descriptive et Iconographique de l'Œuf Humain. Par ALF. A. L. VELPEAU, &c., accompagnée de 15 planches, &c. Paris, 1833. Folio, pp. 104.

Description of the Human Ovum, &c. By ALF. A. L. VELPEAU, &c., accompanied with fifteen plates, designed and lithographed by A. CHAZAL.

IN a former number of this Journal,* when noticing the Essay of Purkinjé on the Ovum of Birds, we took occasion to observe upon the remarkable industry displayed by the continental physiologists, in pursuing difficult and delicate investigations, with apparently no other object than the promotion of professional science, and we selected the names of Desormeaux and Velpeau as striking examples in support of our assertion, little anticipating, at the moment, that the latter distinguished writer would so soon afford an additional confirmation of the truth of our eulogium, by a splendid work on the very subject, the want of which, especially in our own language, we then so deeply regretted: and the announcement, in the first page, of the other works published by the same author within the last three or four years, would appear almost incredible, had we not the books before us to establish the fact, that since the year 1829 he has given to the public no less than eleven volumes, either in octavo or quarto, besides the work, in folio, which is to be the subject of these observations. From the preface we learn that the present volume, which treats of the membranes, the vesiculæ, the funis, the placenta, and the fœtus considered merely externally, is to be hereafter followed by a second part, devoted to organo-genesis, embracing the development of each system, and of each organ in particular, from the earlier periods of gestation up to birth. In the introduction the author informs us, that he has been, since 1821, engaged in the investigations necessary for his object, and it is only necessary to read his remarks, to be convinced with what care and accuracy his researches have been conducted, the results of which he has now laid before us, assisting his verbal descriptions by a series of plates, fifteen in number, and containing no less than 112 figures, of which we may truly declare that they are the very perfection of lithography—there is an exquisite finish and clearness about them in no respect inferior

* See vol. i. p. 209.

to highly finished line engravings, while they possess a softness and richness which would be with difficulty produced on copper. These plates express not only Velpeau's own dissections and examinations, but embody the illustrations, on certain points, of William Hunter, Seiler, Pockels, Breschet, Dutrochet, Home, and others, who have written on the anatomy or physiology of the gravid uterus or ovum, and are accompanied by references, in the way of explanations, so copious as to constitute in themselves a full and satisfactory account of the subject.

In the introduction our author assents to the description given by Baer* of the ovum in the mammalia, as it exists in the vesiculæ Graafianæ previously to vivification. The vesicula itself consists of a granular membrane, which contains a fluid, and is analogous to the vitelline membrane in birds, while the enclosed fluid, which is viscid, pellucid, and of a slightly yellowish hue, may be considered as the vitellus: on the surface of this vitelline fluid is placed the *discus proligerus*, or circular lamina, composed of closely aggregated granules, together with the *cumulus*, in whose centre is the *ovulum*†, these being respectively the counterparts of the *cicatricula* and *vesicula germinativa* in the bird's egg. The ovulum itself varies in diameter from one-fourth to one-eighth of a line; it is spherical, hollow, and composed of two membranes enclosing a fluid. This "first dim speck of entity" having received the impulse of impregnation, bursts through the granular or vitelline membrane, and having passed through the fallopian tube into the uterus, assumes a new form, establishes new relations, and discovers to the wondering eye the germ of a Newton, a Milton, or a Napoleon, in dimensions little exceeding those of a grain of mustard-seed.

Those new relations of the ovum with the uterus, and its component parts, our author proposes to consider and describe, and it shall be our part to analyze the results of his researches, and append a few observations, in the way of commentary, as we go along.

SECTION I.—CHAP. I.—Our author divides the objects for consideration into the membranes, the vesiculæ, the placenta, and funis, as the appendages of the human foetus, and the membranes he considers to consist of three, the decidua, the chorion, and the amnion; in this arrangement we coincide, and shall now follow him.

* De Ovi Mammalium et Hominis Genesi. Lipsiæ, 1827.

† "Like Saturn in his ring."—Baer, p. 13.

The Decidua.—Our author commences with an historical account of the opinions which have been given on the subject of this product, which he very justly considers as the result of a specific irritation in the uterus, by which coagulable matter is poured out into its cavity, to form the *nidamentum* in which the ovum is to lodge on its arrival in the uterus; and in opposition to William Hunter and others, he maintains that the pouch or lining so formed, is a closed sac, without opening either at the orifices of the tubes or at the cervix uteri: but he adopts the explanation long since given by William Hunter, of the mode in which the reflexa is formed: but as our author has summed up his views in a series of corollaries, we cannot do better than at once announce these in his own words, as follows:

“ 1. The decidua exists in the uterus of women, as a pouch without opening, until the arrival of the ovulum.

“ 2. It is at that time filled with a limpid fluid, of a slightly red colour, gelatinous and ropy.

“ 3. It is disposed in the uterus and around the ovum, after the manner of serous membranes, from which, however, it differs in every other respect.

“ 4. Its inner fold, (the reflexa,) distended by the progressive development of the ovum, comes at length into contact with the uterine decidua.

“ 5. These two portions do not unite at any period of gestation, and may be separated even after parturition.

“ 6. Being without texture, the name of *anhiste** is better suited to it than any of those which it bears at present.

“ 7. Its use is to circumscribe the placenta, and fix the fecundated vesicle on a certain point of the uterus.

“ 8. It is found, but with very different characters, in a great number of other animals, and also in extra-uterine pregnancy.

“ 9. It does not envelope the whole of the ovum in the beginning, but it soon mingles itself with the secondary concretion of the placenta.

“ 10. It is not united to the uterus by any tissue: it adheres to the internal surface of that organ, merely as an excreted membraniform flake.”—p. 10.

In the accuracy of these corollaries we fully agree, excepting, however, the sixth and tenth, which deny any organization to the decidua, and our author expressly states elsewhere, (pp. 6, 7,) that it is destitute of blood-vessels, and he thinks that the reason why the decidua has been considered organized and vas-

* This name our author derives from *à non* and *ιστος tela*.

cular by Hunter, Carus, Seiler, Burns, and others, is, that they mistook the inner membrane of the uterus for the decidua, an error which, on another subject, he also ascribes to Drs. Lee and Radford. But in the first place, this appears a very gratuitous imputation of error, when he cannot offer any sort of proof in support of his reproach : and in the next place, we have ourselves the most perfect conviction that the decidua is vascular, and our opinion is the result of numerous examinations of the part at every stage of gestation, and after delivery, when we have separated flakes of the decidua from the membranes expelled naturally, and could detect, without the least difficulty, with the naked eye, the blood-vessels ramifying in its substance, and have in our possession several preparations, shewing this fact distinctly. We may observe here, in reference to the eighth corollary, that we have repeatedly examined this membrane in several of the lower animals, and the most perfect and beautiful example of it in our possession, exhibiting the net-like appearance which induced Osiander and others to call it *membrana cribrosa*, was taken from the ovum of a cat. With reference to the relation maintained by our author, Hunter, and others, as that subsisting between the ovum and the decidua reflexa, it has been objected by Dr. Lee, that “ if the statements of the authors above alluded to, and the generally received opinion respecting the formation of the decidua reflexa be well founded, it would follow, that in all cases the ovum would attach itself to the uterus by the placenta, either directly over the edges of the orifices of the fallopian tube through which it had descended, or to its immediate vicinity, and that the deciduous membrane would never be found interposed between the uterus and placenta as it invariably is.”* But with great respect for Dr. Lee’s opinion, we beg leave to say, that his hypothetical premises above assumed, will not warrant the conclusions which he draws from them, because the ovum may happen, on its arrival in the uterus, to encounter the decidua in a state of such fluidity, or so slightly connected with the lining membrane of the uterus, as to offer it little or no resistance, so that the ovum may easily glide down between it and the uterus, and attach itself to any of the lateral or lower portions of the uterine surface, where it would then form the same relations with the decidua, as if it occupied its more legitimate situation : and as to the second inference, from the presence of a deciduous layer between the placenta and the uterus, of whose existence we have had numerous proofs from examinations, and consider as quite certain, the production of such a layer, we feel no

* Med. Chir. Trans. vol. xvii. p. 496.

doubt in ascribing to the action of the uterine vessels, continuing to pour out coagulable lymph *after* the lodgment of the ovum, whose very presence would constitute a source of irritation calculated to keep up such an action, and we can, moreover, very easily satisfy ourselves, that this deciduous or lymphic product, is not only interposed between the internal surface of the uterus and the placenta, but that it is intermingled with the ramifications of the umbilical vessels throughout every part of the latter body, even to its anterior or foetal surface. Burdach has applied to this layer the name of *decidua serotina*,* from the fact of its being, in his opinion, a product of subsequent formation. Our author furnishes us with the following very full catalogue of the names that have been applied to the decidua by different writers.

“EXTERNAL OR UTERINE DECIDUA.	REFLEX OR INTERNAL DECIDUA.
Decidua, . . . <i>Hunter.</i>	Reflexa, . . . <i>Hunter.</i>
Decidua Externa, . <i>Sandifort.</i>	Membrana Retiformis, <i>Hoboken.</i>
Tunica Exterior Ovi, <i>Haller.</i>	Involucrum Membranosum, <i>Albinus.</i>
Caduca Crassa, . <i>Mayer.</i>	Membrana Filamentosa, <i>Ræderer.</i>
Membrana Mucosa, <i>Osiander.</i>	———— Adventitia, <i>Blumenbach.</i>
———— Caduca, <i>Danz.</i>	———— Crassa, <i>Osiander.</i>
———— Cribrosa, <i>By several.</i>	———— Reticulée, <i>Rouhault, Muller.</i>
———— Ovi Materna, <i>Meckel.</i>	———— Villosa, <i>Eurton.</i>
Epichorion, . . . <i>Chaussier.</i>	Couches Adventives, <i>De Blainville.</i>
Connecting Membrane, <i>Denman.</i>	&c. &c.”
Epione, . . . <i>Dutrochet.</i>	
Nidamentum, . . . <i>Burdach.</i>	
Perione, . . . <i>Breschet</i>	
Membrane Anhiste, <i>Velpeau.</i>	

The decidua was also called spongy chorion by Harvey and others of the older writers.

The Chorion.—On the subject of this membrane our author comes to the following conclusions :

“1. The chorion in the human race is at first only a round vesicle.

“2. Its villousities are not vessels, but merely small granulated filaments, which subsequently are subservient to the development of the vessels of the placenta, on that portion of the ovulum which is in

* “Et c'est plus tard que la portion de matrice mise à nu secrète une espèce de couvercle, caduque secondaire (*decidua serotina*) qui est le rudiment du placenta.”—*Introduction*, p. xxvii.

contact with the internal surface of the uterus, or corresponds to the root of the cord.

" 3. It is to the granulations on these villi that we must refer the origin of hydatids of the uterus.

" 4. In the natural state, at least the half of these gangliform bodies implant themselves in the decidua, and cease to be developed, whilst the others which are in contact with the uterus, or correspond to the vessels of the cord, constitute the rudiments of the placenta.

" 5. The chorion is not an expansion of the skin of the fœtus, or of any other part of the abdominal parietes, but has, from the commencement of pregnancy, certain relations and intimate continuity with the cellular tissue of the cord or umbilical vessels.

" 6. It does not consist of layers at any period of its development.

" 7. It has neither vessels nor nerves properly belonging to it.

" 8. It is of a cellular structure, and is formed after the manner of serous membranes.

" 9. In all animals who have a decidua, or any analogous layer, the chorion forms the second membrane of the ovum, if we proceed from without inwards, and the first when there is no decidua.

" 10. At the full period, its external surface, covered by the decidua and the placenta, is reflexed over the root of the cord, which it covers as far as the abdomen of the fœtus; its internal surface is every where in contact with the amnion."

The above assertions are in complete coincidence with the results of our experience. The flocculent villi, he observes, are evident at three or four weeks; we have a specimen shewing them at three weeks: we agree with him that these villi are not of the nature of blood-vessels; no one has ever been able to detect channels in them with the assistance of the most powerful glasses: this is also the opinion of Blainville, Carus, Breschet, and Raspail. They appear to be merely spongiolæ, and to act as suckers, by the action of which, the ovum is supported until its connexion with the uterus is more perfectly accomplished by the development of the vessels of the placenta. Of the production of hydatids from a diseased growth of these villi we feel quite satisfied, having in several instances observed the fact, and preserved some specimens of this pathological change in our collection. It may not be superfluous to remark, that the absence of blood-vessels in the chorion can only be asserted of the human ovum, since in other animals, especially those with the diffused or the scattered placenta, as the mare and sheep, this membrane carries numerous veins and arteries of a considerable size. In the former of these two animals, the chorion is in fact one universal net-work of blood-vessels of great size, which, suddenly dividing into minute branches, form millions of elevated points, like papillæ, on its external surface,

which being implanted into the soft deciduous efflorescence lining the uterus, draw thence the materials for the supply of the new system during the whole of gestation.

The Amnion.—Our author sums up his observations on this membrane thus:—

“ 1. The amnion, or *agnelette*, is the most internal of the membranes of the human ovum.

“ 2. It is in every instance, where the ovum is healthy, separated from the chorion by an interval which is at first very considerable, but which afterwards continues to diminish from the first fortnight, till the third or fourth month of pregnancy.

“ 3. Its external face, although less smooth than the other, does not bear either cellular filaments nor vessels to unite it to the chorion.

“ 4. Its internal face is at first very close to the embryo, from which it is afterwards removed to a distance directly proportioned to the development of the ovum.

“ 5. It is incorrect to maintain that it is at first continuous with the epidermis of the foetus.

“ 6. In the first month its relations are with the cord only, which appears to perforate it, in order to arrive in front of the spine, and lose itself in some of the abdominal viscera.

“ 7. Afterwards, when the abdominal parietes are formed, it is united so intimately with the epidermis of the foetus, that it would be difficult to deny a real continuity between them.

“ 8. It has no vessels of its own, and there never enters into its composition more than one layer.

“ 9. The relations of the amnion with the foetus, in the other mammiferæ, are the same as in the human species.”

It is remarkable that in enumerating those who have described the space intervening in the earlier months between the amnion and chorion, Velpeau should have omitted the names of Hunter and Burns, the former of whom has given a figure expressly representing the fact, and the latter speaks of the amnion as a small oval suspended within a larger. We would also observe, that this difference of size between these two membranes is most remarkable in some of the armenta and pecora, in whose ovum the amnion, at an early period of gestation, will be found not larger than a walnut, while the chorion extends itself over a surface of some feet.

Vesicula umbilicalis. This part of the ovum which appears to have been totally unknown to the ancients, was, according to our author, first accurately described by Albinus. It is a small pyriform sac, situated between the chorion and the amnion,*

* Our author gave a different account in 1824, but now confesses that he was led into error, having mistaken another body for the true vesicula umbilicalis. p. 42.

largest during the first month, when it is about the size of a large pea ; after this period it diminishes, until it is reduced to the size of a coriander seed ; it is with difficulty found, in general, after the third month, although occasionally it is visible at four, five, and six months ; this sac communicates with the foetus by a pedicle or duct, " whose continuity," says Velpeau, " with the intestinal canal cannot be doubted." p. 42. The coats of this sac have distributed to them an artery and vein, named omphalo-mesenterica by most writers, but Velpeau proposes to name them *vitello mesenterica*, or simply *vasa vitellina*. They open into some of the larger branches of the superior mesenterics ; the sac is filled with a fluid resembling, in some degree, the vitellus of the bird's egg. This vitelline fluid can be made, by gentle pressure, to pass from the cavity of the sac along the duct, and into the intestine of the foetus, precisely in the same way as the contents of the yolk bag pass into the alimentary canal of the chick, or of the foetus of the ovo-viviparous fishes.

Our author considers the uses of this vitelline vesicle as subservient to the nutrition of the foetus in the earliest periods of its formation.

" From the moment of fecundation," he observes, " until the ovum is attached to the uterus, the product of human conception is in every respect like the egg of birds. Like it, free and independent of connexion with the mother, it must carry with it material for support, some substance by the consumption of which the development of the embryo may proceed, just as the chick in its shell must have wherewith to support its evolution."—pp. 44-5.

And accordingly the apparatus here described is found most developed before the complete attachment of the ovum to the uterus, after which time it gradually disappears.

It has been already stated, that, occasionally, this sac is found in the fourth month, or even later ; and while writing these observations an ovum of that period was presented to us by Dr. Douglas, in which the sac still exists, and even of unusual dimensions, being fully three-eighths of an inch in diameter, but the duct is reduced to a mere white line or thread.

The Allantoid.—Our author's account of this structure is, in our opinion, the least satisfactory of the whole work. He considers the reticulated structure, which, in the earlier periods, fills up the space between the amnion and chorion, as analogous to the allantoid in the ovum of brutes, and in some way conducive to the nutrition of the foetus ; but it appears to us that he fails altogether in making out any such analogy.

The Erythroid Vesicle, described by Pockels, Velpeau says he never saw, nor, we believe, any body else.

Funis Umbilicalis.—Our author's observations on this part of his subject are extremely interesting. After a general description of what the cord is, he proceeds (p. 59) to speak of its development, on which subject he says—

“ It is by reasoning from false analogies, or hypotheses, or inaccurate observations, that authors have asserted that the cord did not display itself until after the first month of gestation. The youngest embryos that I have examined had an umbilical cord; I have perceived several of two or three weeks, and not more than three or four lines long, in whom the cord already existed. Resting on numerous facts, I think I might establish, as a general rule, that at every period of the development of the ovum, the length of the cord is nearly equal to that of the foetus, if not a little longer.”

Our experience will not allow of our coinciding altogether in this statement; there is a period of foetal development, at which the foetus is very distinctly visible, but is in close contact with the internal surface of the amnion, and consequently without a cord: and at subsequent periods the length of the cord is almost always considerably greater than that of the foetus. We once met a case of twins, in which both cords were so exceedingly short that there was barely room to apply the ligature, as the children lay close to the external parts—the cords were about eight inches long.

He then proceeds to notice what we have ourselves frequently observed, namely, the existence of swellings along the cord in the earlier months, which generally disappear by the end of the third month; these are two, three, or four in number, and separated by a corresponding number of contractions. It is remarkable that they have not been described by authors.

After stating the well known fact that the cord consists, almost universally, of one vein and two arteries, Velpeau observes that there is sometimes only one artery, an instance of which he met with, and M. Blandin another; these vessels, he observes, are not visible until the first half of the second month of gestation, and do not become twisted spirally on each other until after the disappearance of the swellings of the cord. The mechanism of this spiral twisting he considers as very simple, and as resulting from rotatory movements of the foetus in utero. It is a curious fact, that this twisting takes place so constantly in the same direction, or, to use the words of William Hunter, “ such as would be produced by turning the child round upon the navel as a centre, by pushing its head towards the right side and its feet to the left.” Can the action of the heart have any influence in producing this arrangement? or may we consider it as merely analogous to what we observe to be the inva-

riable mode of growth in certain plants ; or shall we, perhaps more wisely, rest satisfied with seeing clearly that by such an arrangement a final object is attained, by means the best calculated for the purpose.

Under the head of "Varieties" he mentions* "a foetus at Brussels, which has the cord inserted into the head : it was examined by M. Jules Cloquet, who gave it as his opinion that the utero-fœtal circulation had been carried on by that unusual channel."

He discredits, and so do we, the accounts of human foetuses born without umbilical cords, which have been so frequently reported ; but it should not be forgotten that the foetus of the kangaroo, and others of the didelphes, are not at any time provided with such an appendage.

The Placenta.—This is one of the fullest and most interesting sections of the work, and its subject matter, one which has perhaps attracted more attention, and given rise to more dispute than any other point connected with the anatomy or physiology of the ovum. Our author's account of the matter is extremely satisfactory, and, in our opinion, quite correct. He considers the placenta as entirely foetal, and denies the existence of any distinct maternal portion asserted by so many ; an opinion which seems to have been derived merely from analogy, because it was observed that in certain quadrupeds, as cows, sheep, &c., there was an obvious division into two portions ; but in order to destroy the force of any assertion from this analogy, it appears necessary only to observe, that in such animals the cotyledons or uterine fungi are not properly parts of the placenta at all, but permanent structures, at all times existing in and forming part of the uterus of such animals, both before and after impregnation and parturition. In the human subject the placenta evidently consists of the innumerable subdivisions of the vessels of the cord, intermingled with lymph or cellular substance, and the only part of it which could be at all considered as belonging to the maternal system is the layer of decidua, covering its external surface, and interposed between it and the uterus.

Our author also denies the placental cells as described by Hunter and others, which, in our opinion, do not exist, nor do we believe in the passage of large vessels from the uterus into the placenta in any form, because, after repeated examinations, we have never been able to detect them in any one instance, and we agree with Velpeau, "that there is no closer union or

continuity between the placenta and uterus in women, than between the chorion and amnion."—p. 65.

The capillary terminations of the umbilical vessels shooting out from the external surface of the chorion, are covered by a layer of decidua, into which they are implanted, while on the outer side of the same layer the uterine vessels convey the maternal blood, so as to bring it into contact with this layer and the capillary vessels of the placenta, which it receives and covers, so that the radicles of the umbilical vein are enabled to take up from the maternal blood, by imbibition or absorption, the material necessary for the support of the fœtus, in the same way that the same end is accomplished in plants by the action of their radicles and spongioles, as described by De Candolle and Dutrochet.

After mentioning the well known fact, that the human placenta is, like that of some other animals, originally formed in distinct lobes, and that the vessels of contiguous lobes do not anastomose with each other, each lobe being, in fact, a separate and independent structure; he adds, that hence results the fact that one or more lobes may become diseased without preventing the development of the ovum; and that in compound pregnancy one fœtus may die and its placenta wither without injuring the other. Many facts, however, prove that in certain cases of twins the blood returns from one cord by the other. Desormeaux has related an instance of this, and M. Mancel another. Velpéau met with three cases of communication between the vessels of twin placentæ.*

Our author remarks that

"If the part of the chorion on which the cord is inserted leaves the tube last, and rests completely in the angle of the uterus and in the middle of the circle of the decidua, the placenta will assume a more or less perfectly circular form. If on the contrary, it enters first, or is displaced so as to be completely in apposition every where with the ovuline or reflex decidua, its vessels will not be developed, so that the ovum dies and is expelled, or a mole is produced, and spurious pregnancy ensues; and if the same point is very near the circumference of the circle of reflexion, the umbilical vessels will be developed only towards the part where the uterus is partially exposed, and so the placenta will have the shape of a racket, &c."—p. 70.

While writing these observations we received an early ovum from Dr. Beatty, which appears to us to illustrate very forcibly one of the above remarks: the insertion of the cord into the

* Three cases of this kind are noticed in the *Dict. des Sci. Med.* Article, "Placenta."

chorion appearing to have scarcely any connexion with the rudimental villi of the placenta, which it seems rather to approach at an angle than to be connected with; the fœtus is in consequence ill developed, or what is commonly called blighted. Our author in another place (p. 67) notices a fact of great importance in the study of this most interesting branch of physiology, and which we have ourselves repeatedly demonstrated and displayed by numerous preparations preserved in our museum, viz.—that the terminating branches of the placental radicles are not pervious throughout their whole length, so that if the most minute coloured injection be thrown into them, it cannot be made to pass all the way to their points or extremities, but will be observed to stop at a distance of about two lines before arriving there; although, as Velpeau observes, it can be seen under the microscope filling vessels finer than those of the choroid; a very clear proof that there is no continuity of canal with any of the uterine vessels, and that these capillaries act by imbibition, as already noticed.

Did time and space permit, we would willingly enter more at large into many of the points discussed, but, for the present, we must draw towards a conclusion, hoping, ere long, to enter upon this subject in another form and at full length. Before, however, taking leave of our author, we think we shall be doing an acceptable service to our readers in setting before them his summary of some of the facts established by his observations.

“The nutrition of the ovum is accomplished from different sources. At first it is but as a vegetable which imbibes the surrounding fluids. The villous covering of its outer surface, a true cellular spongiole, takes up in the tube and in the womb nutritious principles for the support and development of the embryonic vesicles; after this the embryo is nourished like the chick in its shell, or more correctly, like the little plant which at first unrolls itself at the expense of the principles contained in its cotyledons. By degrees it exhausts the vitelline matter contained in the umbilical vesicle, as well as the emulsive substance of the reticulated or allantoid sac. Then comes the end of the second month and the vessels of the cord are formed, the placenta is developed, and suffices for the evolution of the fœtus; by its contact with the uterus this spongy mass takes up the elements of growth, elaborates them, and thence forms a fluid more or less analogous to blood, and this fluid it is which is absorbed by the radicles of the umbilical vein. In a word, the ovum or the placenta takes up the materials to form the fluids of the fœtus, just as the liver, the kidney, or the testicles obtain from their vessels wherewith to form the bile, the urine, and the semen; and as trees and plants take up in the ground the principles of the many compounds they contain.”—p. 74.

We now take leave of our highly deserving, talented, and respected author, with feelings of admiration and esteem, and are very happy to perceive that the French *Academy of Medicine* have recently testified their approbation of his labours in this volume, by awarding him for the performance a medal of three hundred francs.

W. F. M.

SCIENTIFIC INTELLIGENCE.

CHEMICAL AND PHYSICAL SCIENCE.

On the Employment and Preparation of Formic Acid, by M. J. W. Dobereiner.—When we cause sulphuric acid and the peroxide of manganese to act on sugar in order to obtain formic acid, there is at the same time produced an ethereal substance, which, when isolated, presents the appearance of an oil, and possesses the odour of a mixture of oils of cassia and of bitter almonds. The reduction of the *noble* metals by formic acid is effected almost instantaneously if the solution be brought to a temperature near ebullition, and an alkaline formiate be mixed with it; the metal is precipitated entire, and in a very subtle powder.

The chloride of mercury, similarly treated, does not give up the mercury, but some chloruret of mercury in an impalpable powder. Sublimed chloruret of mercury may be deprived, by boiling with a formiate, of all the chloride which it contained.

The property possessed by formic acid of reducing in the humid way the oxides of the noble metals, by transforming itself into carbonic acid, serves to distinguish it from acetic acid. The acetic acid precipitates the solution of proto-nitrate of mercury in acetate of mercury crystalline: the formic acid seems to alter it only when it is heated, but it is from the metallic mercury that it is precipitated. The most convenient process for procuring this acid depends on a partial oxidation of the sugar. One part of sugar is dissolved in two parts of water: the solution is mixed in the body of a copper alembic with three parts of peroxide of manganese pulverized; the temperature is raised to 60° , and then add by degrees, at the same time stirring, a mixture of three parts of concentrated sulphuric acid, and three parts of water. After the addition of the first third of the acid diluted, there is produced a brisk effervescence which renders it necessary to use a vessel fifteen times larger than that of the mixture; then place on the apparatus its capital, which is united to the refrigeratory. When the effervescence has ceased, the remainder of the sulphuric acid is added, and the distillation is carried on almost to dryness. The acid product is neutralized by chalk. By evaporating it in a retort to which a receiver is attached, we obtain an ethereal matter which is dissolved in the water, and which is collected by distilling the product on chloride of calcium.

One pound (*livre*) of sugar furnishes sufficient formic acid to saturate five or six ounces of carbonate of lime. The residue is some sulphate of the oxide of manganese, some artificial malic acid, and a species of extractive matter. We may employ the sulphate of manganese instead of that of iron in dyeing to deoxidize indigo.

In order to obtain concentrated formic acid, or formic ether, we saturate the formic acid produced by the sugar with carbonate of soda: then we evaporate the saline solution to dryness, and distil seven parts of the salt, dried and reduced to powder, either with ten parts of concentrated sulphuric acid, and four parts of water, or with a mixture of ten parts of concentrated sulphuric acid, and six of spirit of wine perfectly rectified. The formic ether formed in this last case must be stirred with a little calcined magnesia, if it is acid: with a little water to remove the alcohol: it is dried by means of chloride of calcium. The formic ether in contact with the water, is decomposed in formic acid and alcohol: mixed with some watery alcohol, one part of ether for three parts of rectified spirit of wine, it is preserved without change.

Salicine, of all vegetable substances, appears to be that which yields the largest quantity of formic acid, when it is subjected to the action of sulphuric acid and of oxide of manganese.—*Journal de Pharmacie*, Oct. 1833.

First Article on the Application of Electro-Chemical Forces to Vegetable Physiology.—M. Becquerel has proposed in this undertaking, to discover the modifications which the electric forces cause grains and plants to experience, when their chemical actions favour or oppose that of the vital forces: science has as yet received nothing on this subject. It has merely been stated, that atmospherical electricity exercised some influence on vegetation, without, however, any proofs being brought forward.

It has been said that the electrified grains rose more promptly and in greater quantity, that the grain advanced more quickly in the positively electrified water than in it when negatively electrified. Without doubt the electric fluid is not without action on the life of the organized bodies; but we had not followed the mode best calculated to discover the nature of this action, which, in proportion to its intensity, produced either a favourable excitation, or disorganization. Energetic currents decompose, weak currents produce chemical reactions which could not have been anticipated.

§ 1°. M. Becquerel first sought to account for the influence of the parietes of the tubes and vessels with small diameters on the electro-chemical effects, and thereby for certain properties attributed to the tissues under the dominion of the vital forces. For this purpose he introduced some oxide of cobalt, reduced to a paste with water, into the lower part of a glass tube of from eight to ten centimetres, and from two to three millimetres in diameter. Then at the upper part a solution of hydrochlorate of chromium; he then stops

the two openings. At the end of some days there is perceived at the lower part, and even on the surface of the tube, small metallic dentules (*dentules*.) The explanation of this phenomenon seems easy: the two liquors, by mixing slowly, are placed in different states of electricity: these opposite electricities combine along the sides of the tube, which then become the poles of the pile: hence it is that the reduction is effected on the glass. We now conceive how secretions may be produced in the hollow organs of living bodies, every time that a vessel of small diameter communicates in two remote points with two similar conduits (*conduits*), which bring to it each a different liquid. The one not being able to act but slowly on the other, by reason of the capillarity, they will give rise to a small pile, whose action will be continuous, and which shall have as a pole, the parietes of this vessel. A membrane which separates two different liquids produces similar results, which may be designated by the name of electro-capillo-chemical.

§ 2°. M. Becquerel shews in this chapter, how much influence electrical forces, even the weakest, may have on vegetation, since it is sufficient, according to him, to put a plate of zinc, perfectly polished, into distilled water, in order to produce the decomposition of water, and the formation of a small quantity of ammonia; effects which must be produced within the organic matters which surround the roots of the plants with water not distilled, there are produced remarkable effects of decomposition, such as those which Davy has noticed by the spontaneous action of sea-water on copper. The oxidizable metals, iron for example, covered with a solution of sulphate of potash, give rise to a continuous electrical action, which produces subsulphate of iron, and with regard to the potash which is converted into a carbonate by the air, its decomposition proceeds with sufficient rapidity with the filings.

§ 3°. As the grain may be considered as an electro-negative system, which retains the basis, and repels the acids like the negative pole of a pile, it gives rise to some acid excretions, different from that of carbonic acid. M. Becquerel ascertained this fact, by causing different grains to germinate in glasses, whose interiors were covered with turnsol paper, and he ascertained that a considerable number of grains, in germinating, expel an acid which appears to be acetic acid. Fecula, dextrine, sugar, gum, placed under the same circumstances, have readily yielded the acid re-action. M. Becquerel concludes this article, by citing a remarkable observation of M. Orioli, a distinguished Italian, who states that he has successfully treated different wounds, by communicating to the affected organ, an electrical state opposite to that indicated by the either acid or alkaline nature of the secretion.—*Ibid.*

On Essential Oils, by J. P. Conerbe.—An unavoidable journey which I am obliged to make to the south, obliges me, just now, to give merely the spirit of a work which I commenced on the essential oils.

The ultimate analysis of several essences not yielding me precise results, and not being sufficient to lead to any probable theory, I thought that these bodies must be evidently complex : an idea which I elsewhere expressed some years ago, in a paper entitled *Reflections on Aroma*, published in this Journal. The density of the vapour of these oils, which I found equally variable according to the circumstances, has also confirmed me in my opinion, and from that period I abandoned every system to devote myself to observation. The researches made by me to the present period, satisfy me that the essential oils are composed of an oil entirely inodorous, and of an acid, characterized, principally, by the odour of the oil itself, and by the acrid and warm taste, which is equally common to the essential oils. Wishing to confine myself to the announcement of my work, I shall merely state to the Academy, that this result may be arrived at, by treating the volatile oils with caustic and powerful alkalies, and by other means which I shall describe in the memoir. The acids obtained are sometimes two in number, of which one is liquid, and the other solid and crystallized.

In the work which I shall present to the Academy on these bodies, I shall not fail to give the history of the inodorous oil of those acids which are united to it and masked by it, and I shall consider the essential oils in a new point of view, by which a certain quantity of oxygen, however small, shall be admitted in these bodies. Finally, I shall try to prove, that the liquid base, (the inodorous oil,) which masks these odorous acids, is sometimes a carbonated hydrogen, sometimes a ternary oxide, (oxide of carbonated hydrogen,) susceptible of such modifications, that they may be reduced to a sort of ether. All the essential oils do not, however, present the same phenomenon, but undergo, however perceptible, modifications such as are worthy of remark : thus the essential oil of cajeput, for example, which I found to contain one atom of oxygen, treated in the way I have already mentioned, becomes sweeter and sweeter, and ultimately acquires an odour so analogous to that of camphor, that one may be very easily deceived in the case, which will cause no surprise, considering that the oil of cajeput which I analyzed, differs from camphor only by half an atom of oxygen more, so that one might consider it as a semi-oxide of camphor. This, probably, will not be the only essential oil subject to the curious and unknown laws of the anomalies.

Some of the chemists who visited me in the laboratory, have witnessed some of my experiments, and professor Bussy, two months ago, was unable to recognize the oil of turpentine deprived of its acid.

These results, though still imperfect, appeared to some, when considered in a scientific point of view, of sufficient importance to warrant me in presenting to the Academy, the principal data of the long work which I have undertaken.—*Ibid.*

On Kresote, by M. Richenbach de Blansko. Translated from

the German of the *Annales de Schweigger-Seidel*, vol. six and seven, by M. A. G. Vallet.—Kreosote is a new substance, first found in pyroligneous acid, afterwards in all the tars, by M. Richenbach. It is to the works of this chemist on the dry distillation of organic bodies, that we are still indebted for the discovery of paraffine, of eupione, and of picamare : but kreosote presents to us quite a different interest from these latter bodies, with respect to its chemical properties, and the happy applications which might be made of it in therapeutics, in domestic economy, and on long voyages.

This substance is an oily liquid, colourless, transparent, possessing considerable refrangibility : its odour is penetrating, disagreeable, resembling that of smoked meat. Its taste is hot and very caustic : its consistence that of oil of almonds ; its specific gravity is 1,037 under an atmospheric pressure of 0,722^m, and at 20° Cels.* it boils at 203° Cels. it is not congealed at a temperature of 27° Cels. it burns with a very fuliginous flame. It is not a conductor of electricity. At 20° it forms with water two different combinations : one is a solution of one-fourth part of kreosote in one hundred parts of water ; the other, on the contrary, is a solution of ten parts of water in one hundred of kreosote.

The aqueous solution of this substance changes neither the colour of turnesol nor of turmeric, and is not neutralized either by acids or by alkalies ; it forms, however, numerous and interesting compounds with these two classes of bodies. Concentrated kreosote dissolves deutoxide of copper, assuming the colour of brown chocolate : it reduces the deutoxide of mercury at the boiling heat, and is itself converted into a resin which contains no more kreosote. Nitric acid attacks it briskly, giving rise to a disengagement of red vapours. It combines with chlorine, bromine, iodine, phosphorus, and sulphur. On absorbing chlorine, the oil at first assumes a pale yellow colour, then a deep reddish yellow, and ultimately there is a production of the resin above mentioned. Potassium thrown into kreosote, disappears : there is then a disengagement of gas, and formation of potash, which remains combined with the thickened kreosote. This substance is separated from it, without any alteration by distillation. Sulphuric acid, concentrated and in small proportions, turns kreosote red, but a greater quantity blackens, and also thickens it. The sulphuric acid itself is then decomposed : some sulphur is set at liberty. Of all the organic acids, acetic acid is that which evinces most affinity for kreosote : these two bodies are mutually dissolved in all proportions : the acetic acid seems to be the specific solvent of kreosote. This substance forms at a low temperature, two combinations with potash ; the one is anhydrous, liquid, of an oily consistence, the other hydrated crystallizes in white pearly spangles. The acids, even the carbonic acid, separate the kreosote from these combinations,

* Celsius' thermometer is the same as the centigrade.

without its being changed: it bears the same relations to soda. It has great affinity for lime and hydrate of baryta, and yields with these bodies, compounds of a dirty white, soluble in water, and which, in the dry state, are in the form of a pale rose-coloured powder. Ammonia is instantly dissolved in it, even in a cold temperature. This alkali usually accompanies it, and it is not without difficulty it can be separated from it. Kreosote dissolves a considerable number of salts; some in the cold, others by means of heat: some are then reduced; but the greater part separate in crystals on cooling: such are the acetates of potash, soda, ammonia, lead, zinc, and the hydrochlorates of lime and of tin. It reduces the acetate to nitrate of silver. Alcohol, ether, carburet of sulphur, eupione, oil of petroleum, and acetic ether combine in all proportions with kreosote. Paraffine, though coming from the same origin, has very little tendency to unite with kreosote: it is not dissolved in it, but in the same quantity as this latter contains of eupione, and the quantity dissolved is in the direct ratio of the proportion of eupione. Of all organic substances, it is the resins, the resinous colouring principles, and other similar bodies that are most briskly attacked by kreosote, it decomposes them even at a low temperature, or else dissolves them entirely: at a cold temperature, it forms a yellowish red solution with cochineal, a deep red with dragon's blood, red with santalum rubrum, pale yellow with santalum citrinum, (*santal citrin.*) deep purple with sorrel, yellow with madder, golden yellow with saffron: brought into contact with indigo, it dissolves, but at a high temperature, the colouring matter, which is precipitated from it by the addition of alcohol and water. Kreosote with difficulty dissolves caoutchouc by the aid of boiling, in this particular differing from eupione, which attacks this latter body with so much facility. The properties of kreosote which I have still to detail, are unquestionably the most interesting. As soon as it comes in contact with white of egg, the latter coagulates; if into an aqueous and dilute solution of this latter body, we pour a single drop of kreosote, it is instantly covered with white pellicles of coagulated albumen. When fresh meat is put into a solution of kreosote, and if at the end of a half hour or an hour, it be removed from it and dried, it may be exposed to the sun's heat without entering into putrefaction; in the space of eight days it hardens, assumes an agreeable odour of good smoked meat, and the colour passes to a reddish brown. Fish may be preserved in the same way: now as pyroligneous acid and tar water produce the same effect, it is no longer doubtful but that the kreosote is the preserving antiputrescent principle of these liquids as well as of smoke. Curious to know how kreosote acts under these circumstances, and supposing that it was on the blood that the re-action took place, M. Reichenbach brought kreosote successfully in contact with the serum, the clot, the colouring matter, and the pure fibrin, and he concluded from his experiments that the kreosote coagulates the albumen of the blood, that this coagulation takes place instantly when the two liquids are con-

centrated, that it is effected only gradually, if the one or other be diluted, that fibrine, separated carefully from the other principles, is not attacked by kreosote. Now it is known that albumen, when once coagulated, no longer putrefies, and the muscular fibre does not appear by itself susceptible of putrefaction. It is in reference to this preserving property that M. Reichenbach has given to the new substance the name of *kreosote* (from *κρεας*, flesh, and *σώζω*, I preserve.)

The action of kreosote on the animal economy is deleterious; When put on the tongue it occasions violent pain. When any of this substance, in a concentrated state, is poured on the skin, it destroys the epidermis: insects and fishes thrown into a solution of kreosote soon perish: plants also die when sprinkled with this solution. This poisonous action is probably owing to the same property which renders kreosote capable of preserving dead flesh from putrefaction, that of coagulating albumen.

Medical men know the medical properties of tar, of pyroligneous acid, of the animal oil of Deppel, of empyreumatic water, the discovery of which is more recent, and which is prepared by adding, at a high temperature, some chalk to ordinary pyroligneous acid till the effervescence ceases, and drawing off by distillation a little more than half the liquor. This water in particular had already produced the happiest effects in the treatment of cancers and of gangrene. Supposing that all these preparations owed their medicinal properties exclusively to kreosote, M. Reichenbach has made experiments with this substance, both in the concentrated and diluted form, and his success has far exceeded his expectations. There was effected, he says, a rapid cure in cases of caries, cancer, carcinomatous ulcer, &c.: a patient attacked with pulmonary phthisis in the last stage, had even been restored to health by the internal use of kreosote. Finally, the author calls on practitioners to multiply these experiments. The preceding observations point out to how many uses this substance is applicable. The only thing to be desired is that the preparation, which is tedious and difficult, could be simplified. Two processes have been proposed; the one to draw off the kreosote from the pyroligneous acid, the other to extract it from tar: the latter only I shall describe, seeing that tar furnishes a greater quantity of this substance, and that its extraction is easier. These two processes differ in other respects only in the first periods of the operation. The tar arising from the dry distillation of organic bodies, that of beech for example, is subjected to distillation in metallic retorts, till the residue attains the consistence of black pitch. It is useful to stop the distillation rather soon than late, because otherwise the residue, by being carbonized anew, might introduce into the distilled liquid empyreumatic products of the same description as those which it was the object of the first distillation to get of. The liquor collected in the recipients contains oil and empyreumatic acid water: this latter is rejected.

The oil, called *oil of tar*, is then poured into glass retorts and rectified; here also care is taken not to carry the distillation to dry-

ness, and to reject the acid water received anew into the recipients. In these two distillations the oil of tar, which distils at first at a low temperature, is light, though unequally so, but its weight increases with the heat: attention is paid to the period at which the oil gains, of itself, the bottom of the water; all this that still floats over this liquid is poor in kreosote; it consists, in a great measure, of eupione, and of different lighter substances, which alter the purity of kreosote; this upper layer ought then to be rejected. In this state the oil of tar is of a pale yellow, heavier than water; it browns in the air; its smell is disagreeable; its taste is acid, caustic, sweet and bitter at one and the same time; it is heated, and there is added some carbonate of potash, till, on shaking it, it no longer disengages carbonic acid; it is decanted to separate it from the solution of acetate of potash, which is formed, and distilled anew in a glass retort. The distillation is not carried to dryness, and all the first products which float upon the water are rejected. The oil is then dissolved in a solution of caustic potash of a specific gravity of 1,12; considerable heat is developed; a portion consisting of eupione, &c. is not dissolved, it floats on the surface and is removed. The alkaline solution is poured into an open capsule, and brought slowly to ebullition. It greedily absorbs a considerable portion of oxygen from the air: a particular oxidizable principle which is mixed with it is decomposed, in a great measure, by this absorption, and then the mixture becomes brown. After the cooling, which is also suffered to proceed in the open air, there is added to it some dilute sulphuric acid, until this oil is set at liberty. It is distilled but with some water to which is added a little caustic potash. As the water dissolves a portion of the kreosote, it becomes necessary, in order to avoid greater loss, to cohobate, from time to time, the water that has been distilled over: still the process goes on but slowly, because the tension of the kreosote is not yet considerable, even at 100° C.: but there comes a period at which, though a considerable portion of oil is still seen in the retort, the quantity of the oil which passes over in distillation diminishes considerably, and augmenting the fire does not accelerate the operation: this is the moment for stopping the distillation. The residue contains picamare, a small quantity of a combination of this body with potash, some sulphate of potash, a little acetate of the same base, and the brown principle.

The oil of the recipient is separated from the water which passed over with it in distillation, and it is dissolved a second time in a solution of potash of the specific gravity of 1,12. There again remains a notable quantity of light oil, which is not dissolved, which still consists of eupione, &c., and which is rejected. The mixture is still heated slowly to ebullition and in open air, and it is suffered to cool gradually; it again becomes brown, but much less so. There is again added to it some sulphuric acid; care is taken this time to pour on a slight excess of it, in order that the oil itself may absorb a small quantity of it, and then the latter is washed several times with cold

water, till it is no longer acid. The distillation is repeated with water, to which there is added, at this time, no more potash, but a little phosphoric acid, in order to carry off a little ammonia which the oil still retains. Then we proceed to the third solution of the oil in the caustic potash. If the precautions already given have been duly observed, these two bodies then combine without leaving any residue of eupione, and the mixture heated in contact with the air no longer becomes brown, it merely assumes a slightly reddish tinge: it is clear, however, that if there was still a separation of eupione, and a brown colouring of the alkaline solution, the solution in potash must be repeated a sufficient number of times. In this state the kreosote is not yet perfectly pure, but yet it may be employed for medical purposes. Its purification is thus accomplished:—it must first be distilled with water without any addition, then rectify the product of this distillation, which is no longer but a hydrate: at first a considerable quantity of water passes into the receiver, when the heat is not yet raised: its quantity diminishes by degrees, then ceases altogether: there passes over at the same time a little kreosote: all these first products ought to be rejected, and the kreosote should not be collected till it not only passes over without water, but also till the heat be raised to 203° C. This last process might be perfected by rectifying once again the product of the distillation, and making the vapours to pass through the chloride of calcium.—*Ibid.*

ANATOMY AND PHYSIOLOGY.

Remarkable Malformation of the Heart and its Great Vessels.—In August, 1825, Dr. Holst, of Christiania, examined the body of a female child, aged seven, who had expired in a paroxysm of suffocation, after having, from her second year, exhibited all the symptoms of cyanosis. These had at first been slight, but gradually increased in intensity, till at last death put an end to the patient's sufferings. The following was the result of the examination:—

The heart was unusually large, and the pericardium contained about half an ounce of serum. The right ventricle was about twice as large as the left, and its columnæ carneæ were much stronger. In the upper part of the septum of the ventricles was an aperture, about half an inch in diameter; just beside this aperture the aorta and pulmonary artery arose, *both* from the right ventricle, the latter somewhat upwards and forwards; they were each about a third less in volume than usual. The right auricle was larger, and its bundles of muscular fibres stronger than ordinary: the left was uncommonly small, and the foramen ovale open, as in the foetus. The valves were all *natural*.

The aorta gave off from its arch, three distinct and remarkably large arteries, namely, the right subclavian, the right carotid, and the left carotid; but there was no left subclavian. It then diminished considerably, and below the arch was of but half its former size.

The left arm was next examined for the brachial artery, which was found, and traced to the thorax, where, as the left subclavian, it suddenly terminated at the second dorsal vertebra, almost an inch from the aorta. The subclavian portion gave off the usual branches: its vertebral artery was even remarkably large, passing from below upwards, and somewhat inclining to the left.

The pulmonary artery, which was very small, gave off from its left branch, from the same place where the ductus arteriosus is generally found, a canal, two inches long, which likewise went upwards and towards the left side, and entered the left subclavian, at almost a right angle. This canal was small, but pervious.

The lungs were small but natural: the thymus, on the contrary, was remarkably large, and appeared to have increased with the growth of the individual, instead of diminishing.—**Eyr.* vol. vii. part iii. for 1832.

PATHOLOGY AND THERAPEUTICS.

Discharges of Fatty Matter from the Bowels.—In the eighteenth volume of the *Medico-Chirurgical Transactions*, we find recorded a great number of facts relating to this curious symptom. Dr. Bright, so well known by his pathological researches on the disease of the kidney and alimentary canal, relates in his paper, several cases bearing on this subject; and endeavours to found a diagnosis on the occurrence of the symptom in question, which he describes as “a peculiar condition of the alvine evacuation, a portion more or less considerable, assuming the character of an oily substance resembling fat, which either passes separately from the bowels, or soon divides itself from the general mass, and lies upon the surface, sometimes forming a thick crust, particularly about the edges of the vessel, if the fœces are of a semi-fluid consistence; sometimes floating like globules of tallow, which have been melted and become cold, and sometimes assuming the form of a thin fatty pellicle over the whole, or over the fluid parts, in which the more solid figured fœces are deposited.”

In the three first cases which he relates, there was a great similarity in the lesions observed; these were disease of the pancreas causing obstruction of the common bile duct, with malignant ulceration of the duodenum: in all of them, also, there was jaundice, which

* *Eyr* is the title of a medical periodical published in Christiania.

followed upon chronic disease of the digestive system. In the first case, the discharge of fatty matter from the bowels followed the disappearance of saccharine diabetes, and it is interesting, that the exhibition of alcalies removed for a time the appearance of the fatty matter in the stools.

The same author details other cases of disease of the pancreas, in which, however, the symptoms of fatty discharges did not appear : in these cases, however, the disease had not extended to the duodenum, or did not affect the head of the pancreas. Dr. Bright remarks, that in several cases of scirrhus disease in other situations, the bile is very apt to deposit concretions of fatty matter in the gall bladder, and this, according to him, is true, whether the disease has or has not attacked internal organs.

In the same work, the subject is noticed by Mr. Lloyd and Professor Elliotson ; the first gentleman details a case of a patient, who, after symptoms of disease of the liver and stomach, which continued for several months, with jaundice, began to pass a fatty or oily matter in considerable quantity from the bowels. It was remarkable that in this case, the colour of the evacuations was always dark when the fatty matter appeared, and on its cessation assumed a pipe clay appearance. On dissection, the stomach was found greatly enlarged, the duodenum contracted, the head of the pancreas slightly indurated, and its duct at the duodenum completely obstructed ; the liver was enlarged, and the biliary vessels greatly dilated and filled with bile, in consequence of the obstruction of the common biliary duct where it opens into the duodenum.

Dr. Elliotson commences his paper by alluding to the opinion, that the substance called ambergris is supposed to be produced by disease in the alimentary canal of the spermatic whale, (*Physeter Macrocephalus*.) An instance is related in the *Philosophical Transactions*, anno 1783, where a mass amounting to 182 pounds, was found in the body of the animal. The learned author proceeds to relate several cases from the writings of others, and from his own experience : he quotes from Møllenbroccus and from Mæbius, in the *Ephemerides*, Dec. 1, 1671, cases of a discharge of a large quantity of fatty substance, with gradual wasting. Also, from Fabricus Hildanus, of a "pious and virtuous matron," who suffered for years from a pain of the stomach, which became at length much worse, when one day the pain extended all over the abdomen, and she discharged about three pounds of fat, and from that moment speedily and perfectly recovered. The fat in this case was not mixed with the feces, was white, very pure, and free from smell. Other cases are instanced : thus, Dr. Scott of Howick, relates the case of a girl who, after working hard in warm weather, was seized with a pain in the stomach, loathing of food, obstruction of the menses, colics, and flatulency. This patient, after taking emetics, and boluses with rhubarb and calomel, passed great numbers of fatty substances, about the size of nuts, beans, peas, &c : they resembled tallow in every

respect. After passing these for three weeks, she recovered her health. A somewhat similar case is published in the Phil. Transactions, 1813, in which the patient, a lady, had suffered severely from what was supposed to be the irritation of gall-stones, for many years. The taking of two or three ounces of olive oil at a time, gave almost immediate relief, and she then passed globular concretions of what Dr. Elliotson believes to be the fatty matter. The same remedy, taken in the dose of a pint, relieved two cases perfectly: one of these was under the care of Dr. Simpson of New Malton, the other under that of Mr. Howship. The symptoms were, violent attacks of pain in the hepatic region, jaundice, and pyrexia for several days, followed by the discharge of this matter. The same symptom was observed in a case of hysteria, with distention of the abdomen.

Other instances are noticed by Dr. E. in which the fat was discharged *liquid*, and then concreted into the appearance of butter. A remarkable case occurred to him, in which the *patient expectorated pus: laboured under diabetes mellitus, and passed large quantities of fat from the bowels*. On dissection, the lungs were found tuberculated and ulcerated; the kidneys and liver were sound, but all the intestines looked yellow and greasy, as if they had been soaked in oil. Numerous black points were seen in different parts of the mucous membrane. But the fat may be discharged both in the solid and liquid state at the same time, of which a case is given. The patient had phthisis, and passed, daily, about two ounces of fat, and the third of an ounce of oil. On dissection, no disease was discernible in the alimentary canal: the liver was large and pale, though otherwise healthy in structure; it and the gall bladder were destitute of bile, the latter contained a greasy mucus.

Tulpius is quoted by Dr. E. as relating a case where fat was discharged both from the bowels and bladder. He begins thus: "But what do we say of Margaret Appelmania, an inn keeper, who, in her seventieth year, passed precisely the same fat from both the intestines and the bladder, and likewise without fever, emaciation, or colliquative excretion. Towards the close of the disease, however, she did become feverish, and in consequence, so emaciated, that death found her little else than a juiceless, dried up corpse." Mr. Pearson communicates to Dr. Elliotson the particulars of a similar case. There were suppression of the biliary secretion, and a copious discharge of oil from the bowels and bladder, which, it is stated, formed good soap when mixed with alkali! Dr. Prout has observed fatty matter passed with the urine, and considers this symptom as an indication of the probable supervention of malignant disease of the kidneys and bladder.

If to these cases, we add that recorded in the *Annali Universali*, which is quoted by Dr. Johnson in the *Med. Chir. Review* for July, 1826, and also that reported in the *London Medical Gazette* for April last, by M. Eastcott, we have twenty-two cases. Of these, twelve were fatal; three of them, mentioned by Dr. Bright, presented disease of the

pancreas, with malignant ulceration of the duodenum, with jaundice ; one by Mr. Lloyd, presented obstruction of the common biliary duct, and contraction of the duodenum, the liver being gorged with bile : in two there was phthisis, with but little morbid appearance in the digestive system. In Mr. Eastcott's case, there was disease of the pancreas, with chalky concretions in the duct, and we have no account of the morbid appearances in the remaining five. Of the remaining ten cases, nine are reported to have been instances of recovery, which, in several of them, followed the employment of purgatives, and the use of large quantities of olive oil, and in the majority of these, the symptoms were those of great derangement of the upper portion of the digestive tube and biliary system. The case from the *Annali Universali* was remarkable for this, that the fatty matter was discharged from the stomach by vomiting, and amounted in twenty-four hours to thirty pounds weight ; the patient nearly sunk, and his skin hung in folds, as though all the fat had been absorbed ; in twenty days he was restored to health.

In the present state of our knowledge of this affection, there seems reason to connect it with disease in the liver, duodenum, and pancreas, but we fully agree with Dr. Elliotson in thinking, that the pathology of the disease lies open to further investigation.

Glanders in the Human Subject.—It is nearly three years since Dr. Elliotson drew the attention of the British practitioners to the fact, that the glanders of the horse was communicable to man.—(*See Med. Chir. Trans.* vol. xvi.) The doubts which were entertained on this subject have been since gradually giving way, and the question seems now to be set at rest, by the publication of a case by the same eminent and successful physician, in the new volume of the *Med. Chir. Trans.* the particulars of which we here subjoin.

William Johnson, aged twenty-three, was admitted on the 31st of January, into St. Thomas' Hospital, under Dr. Williams. He complained of tightness across the chest, pain in the right side and loins, and great lassitude. The tongue was somewhat coated with yellowish mucus. There were sweating and thirst, and the pulse was 90.

On the 2nd of February there were pains of the head and loins, and frequent watery and offensive stools. He became a little incoherent in his answers ; rigors began, and the tongue was tremulous. He continued to be occasionally delirious, and on the 4th, in addition to the other symptoms, there was pain in the forehead and vertex, in the right hypochondrium, and in the extremities. On the 10th he had been furiously delirious, and required strapping down ; he complained of gnawing pains in all his limbs, of great difficulty in moving the left arm, for the joints were very painful, and the knuckle of the fore finger was tumefied and red ; the discharge from the skin was profuse, sour, and offensive ; leeches were applied to the temple. On the 11th the swelling in the hand had increased, there was also

a red swelling on the right outer ankle ; the tongue was covered with a brown dry fur, and there were much thirst and heat of throat. On the 13th, a portion of his chest which had been blistered before his admission, and had now been sloughing several days, was affected with burning pain ; the right temple, on which the leeches were applied, was much swollen and dark coloured, the right eye closed, and the leech bites discharged an unhealthy pus. On the 14th, in the evening, an offensive and yellowish discharge began from the right nostril, and a large swelling arose in the middle of the forehead of a purplish appearance, the left eye was nearly closed, and numerous tumefactions took place on the arms and legs ; several phlyzacious pustules were seen on the left side of the neck ; the pulse was 112.

Mr. Stone, the assistant apothecary, who had seen the former cases of glanders in the hospital, imagined, from the present appearances, that this must be one of the same kind, and on questioning the man, *actually learned that his occupation was among horses, that he had been grooming a glandered horse, kept in a stable by itself, and that he remembered that the discharge from the nostril had frequently fallen upon his hand, upon which the scar of a wound was still visible.*

On the 15th, being in the hospital, I was requested, says Dr. Elliotson, by Mr. Stone, to see the patient, and I did not hesitate for a moment to coincide with him in opinion ; I did not know the man's occupation, but asked him the same questions that Mr. Stone had put to him, and of course received the same answers. The whole scalp was now become tumefied, the forehead purplish, the eyelids red and shining, the burning sensation in the throat and nostrils, and the thirst, were intense, more tumefactions appeared on the extremities and abdomen, and several phlyzacious pustules appeared on the left side of the body. The discharges from the skin and bowels continued copious. The pulse was 124.

On the 16th the discharge from the nostrils, particularly the right, was very considerable, and of a glutinous and brownish character, and ran in a continued stream down the face and neck--the thirst was unquenchable. Another purple tumefaction appeared on the right side of the nose, near the inner canthus, and soon increased so as to occupy nearly the whole of that side of the nose. On the 17th he sunk, and died early in the morning.

Autopsy.—On cutting into the various tumefactions on the head, neck, and extremities, they were found to be full of pus, underneath which, in many, a number of small white granules were seen, and these, in several instances, were attached to the periosteum, or perichondrium. The frontal sinuses contained a jelly-like secretion, and a number of similar granules, and on the septum narium was an ulcer exactly like those which I have seen in the nostrils of glandered horses, and upon it lay a cluster of granules.

Two or three very large white circular elevations were found immediately below the sacculi laryngis ; Mr. Youatt, who was present, called them "true glanderous chancres."

About an inch below the valve of the colon, for three inches in extent, on the whole of the surface, were white granules, exactly like those in other parts.

Dr. Elliotson concludes by remarking on the probable frequency of similar occurrences ; and states that, since the publication of his former paper, upwards of a dozen cases have been related to him by medical men, which they are now satisfied were instances of glanders.

A very characteristic plate accompanied Dr. Elliotson's paper.

Of the Employment of Chloride of Gold and of Sodium, in Syphilitic Diseases.—The preparations of gold, formerly tried, had such little effect, that Spielmann even went as far as to deny them any kind of action ; and to attribute their activity to the substances with which the gold was combined. The chloride of gold and of sodium seems to have been expressly invented to overturn that opinion ; for that preparation may properly be considered as one of the most active agents of therapeutics. The chloride of gold possesses, in fact, such activity, that medical men hesitated for a long time before they prescribed it as an internal remedy. Before they ventured to employ it as such, they followed, for some time, Mr. Chrestien of Montpellier's method, who administered it, combined with double its quantity of the powder of lycopodium, by friction on the tongue or gums ; or else that of Mr. Niel, by external friction, and always in exceeding small doses, the fifteenth or sixteenth of a grain daily.

Messrs. Bories and Pierquin had, some time ago, formed a syrup composed of one grain of the chloride of gold and of sodium, dissolved in eight ounces of the syrup of sarsaparilla ; of which from one to three ounces were given daily, at two different periods, and gradually increased. The fallacy of that formula will be immediately perceived, for on account of the action which the elements of the syrup may exercise over the salt of gold, we may be exposed to administer a preparation of gold of a very uncertain nature. In consequence of the preceding formula the chloride of gold was seldom given internally, although several experiments were tried, and with good success, by friction, particularly by Messrs. Chrestien, Lallemand, and Cullerier, and since by several other medical men.

Lately Dr. Bourquenod, member of the faculty of medicine of Montpellier, and for ten years physician to a venereal hospital, and accustomed to treat syphilis with Van-Swieten's liquor and mercurial frictions, in a memoir which he lately published mentions the successful treatment of several cases by the administration of the chloride of gold and sodium, in a mode which Dr. Chrestien seems to have reserved for some particular cases, and which he never used in the primary symptoms ; that mode consists in dissolving one grain of the chloride in six ounces of perfectly distilled water, and every day one or more spoonfuls of this mixture is to be taken in a glass of tisan, which the patient swallows immediately under the guidance of a vigilant attendant ; with such attention the chloride will not be

decomposed. But it is of the greatest consequence to know the manner in which the chloride of gold and of sodium, which they administered, is prepared; for Dr. Bourquenod attributes to the different compositions of that salt the different effects which experimentalists have perceived. Thus, Dr. Delafield of New York was enabled to administer a grain and a half of the chloride daily, without having any bad effect; whereas, the medical men of Paris have remarked as ordinary phenomena, after the administration of much smaller quantities of the chloride, an intense heat, headach, dryness of the mouth and throat, oppression, gastric irritation, fever, &c., opposite results which can only be attributed to not using the same substance. Dr. Bourquenod, also, does not recommend the use of it as employed by himself, but of the crystallized chloride, prepared after the mode published by Figuier, jun. apothecary at Montpellier, and the formula found in the codex, giving in lieu of the crystallized chloride of gold and sodium, a chloride of gold imperfectly prepared, with the addition of an infinitely small quantity of chloride of sodium.

It is the chloride of gold and of sodium thus prepared that M. Bourquenod employed, and under the form announced above. Eight patients were treated by him in that manner; they had either primitive or consecutive syphilitic affections, chancres, bubos, gonorrhea, pustules, in short, diseases manifestly and decidedly syphilitic. They all recovered under the influence of the treatment adopted for them, in which emollients, sudorifics, and the chloride of gold and sodium were employed and combined, according to the indications. All the patients, before they recovered, used at least seven grains of the chloride of gold, and one woman, more grievously affected, used nine. If, in the first few days, the patient complained of nausea from the use of a spoonful daily, they soon became habituated to it, and all, at the end of the treatment, were enabled to bear three or four spoonfuls daily of the preparation which M. Bourquenod administered. He also remarked the menses as regular, and perhaps in a greater degree in the females to whom he prescribed it. Lastly, he seldom had occasion to remark fever and erethismus produced by this medicine.

If, as the observations of M. Bourquenod seem to confirm, the chloride in solution is less active than in powder, the dose may, without any inconvenience, be increased and administered for a longer time, which incontestably offers a great advantage.

When the mouth and throat are affected with syphilitic symptoms, even when the nose or face in general are affected with pustules or ulcers, the very mechanism which the friction on the tongue requires, and the application of the remedy to a surface near the seat of the disease, necessarily augments the inflammation of the affected parts; it would appear that in such cases its internal administration ought to be preferred.

Finally, he presents these opinions only under the form of doubt, and terminates his work in recommending more particularly the preparations of gold in the following circumstances:—

1°. When mercury *intus et extra* has proved insufficient.

2°. To patients, who, having suffered repeatedly from venereal, have undergone an equal number of mercurial courses.

3°. When scrofula and syphilis are combined.

4°. When patients are so susceptible and so irritable, that they cannot, without injury, bear the smallest dose of mercury.

5°. Lastly, in consequence of ulcerous affections of the mouth and throat, where the administration of mercury, easily occasioning salivation, could not but aggravate the symptoms spoken of.

There is no practitioner who would not perceive the importance of confirming, by numerous and varied observations, all these propositions, to which the experiments of M. Bourquenod seem naturally to conduct. These conclusions appear to us a sufficient reason, why we should not hesitate to call on medical men to make personal experiments on this subject. Undoubtedly eight experiments are not sufficient to establish the specific properties of the chloride of gold administered in that manner, but observations supported by what was already known on the chloride of gold administered by friction, deserve to be taken into good consideration. Mercury has been so frequently abused, so frequently accused with reason, and undoubtedly also, sometimes without reason, of being itself the cause of the accidents which befel patients, and which were attributed to syphilis, that all medical men ought to consider as a happy circumstance for therapeutics, the discovery of a substance which overcomes these diseases; for it is unhappily true that they do not always yield to the use of mercury, nor to the best directed physiological treatment. The only reproach that can be made to the above medicine is, that it is dear, but happily so small a quantity is required, that there is in the end a sort of compensation.—*Bulletin de Therapeutique.*

Remarks upon the Treatment of Typhoid Fever, and upon the Benefit that may ensue from the use of Coffee in that Disease.—Although typhoid fever, which has been designated in so many ways, has for a long time been the object of the study of medical men, yet the uncertainty which still remains in science about that disease, and the difference of opinions of several great men as to its nature, sufficiently prove that it is not perfectly understood. Could all its malignity reside, as Baglivi said, *De Febris Malignis et Mesentericis*, in phlegmon or erysipelas of the intestine? Would not the nervous system be directly affected? or would not the fluids of the economy be impregnated with certain deleterious principles which would contribute to aggravate the symptoms, as might be believed from some works recently published? New facts, well observed, will, perhaps, succeed in throwing light on these important points of the history of that affection, and to give a solution to these questions. We propose solely, in these remarks, to shew that the remarkable and painful influence which the brain experiences in that disease, is susceptible of being, in some cases, advantageously modified by the use

of a therapeutic agent rarely employed, although simple, and the effects of which are known; I am speaking of coffee. There are circumstances in which the subtraction of a symptom is a thing of sufficient importance to try to obtain it, but the suitable and opportune occasion must be seized, for care must be taken not to make that therapeutic common to symptoms, the folly and danger of which may be easily demonstrated.

Moderate antiphlogistics and emollients are for us the means most generally useful in the treatment of typhoid fever. Extolled by Baglivi and professor Broussais, we have employed them with success in every case where, to the inflammatory symptoms presented by the digestive organ, continued fever of a remarkable intensity was joined. We have also observed the good effects of tonics administered by M. Petit, at the hotel Dieu, in cases of entero-mesenteric fever. Out of eleven very severe cases which I collected, during the third quarter of the year 1820, being clinical assistant to that distinguished practitioner, four cases terminated in death, and seven were cured. The patients who form the subject of these last observations had, in general, febrile symptoms, accompanied with a very sensible remission in the morning; and the abdomen with them was not the seat of very considerable sensibility, or, when that happened, the judicious practitioner, of whom we have just spoken, ordered leeches to be applied, ordinarily round the anus, and suspended for the time the tonics. I have since sometimes employed the same remedies, taking into account the two circumstances which I have just noticed; a marked remission of the febrile symptoms, and the slightly developed sensibility of the abdomen: I had only to felicitate myself in the greatest number of the cases; but, it must be allowed, these cases are much less numerous, than those in which emollients ought to be prescribed in preference.

We have approximated these two opposed treatments of the same disease, for the purpose of proving that it is important for therapeutics to know the different shades of an affection, and to bear them in mind in the treatment which ought to be adopted; several other indications have been followed with more or less success in the treatment of typhoid fever, of which we shall not speak, wishing only to occupy ourselves at present with the cases in which the infusion of coffee appeared to us to offer unquestionable advantages.

Obs. 1. *Julienne*, aged twenty years, of a strong constitution, having come from *La Côte-d'or* to *Suresne*, to work in the fields, felt, after some days, a sensation of lassitude, which she endeavoured in vain to overcome. The 10th of June, 1831, eight days after the illness commenced, she entered the *Beaujon Hospital*, *Sainte-Eudalie's* ward.

The 11th she was in the following state:—decubitus on the back, countenance sunk, severe pain in the front of the head, intellectual faculties heavy and as if stupified, tongue red at the sides, severe thirst, pains of abdomen more intense at the ileo-cæcal region than

the other parts, cough, râle sibilant, chest sonorous, pulse full and frequent, intense heat of the skin. Twenty leeches were applied to the right iliac fossa, emollient fomentations, barley water, cough mixture, enema, diet, &c.

The following days the abdominal symptoms experienced a sensible amendment, but the headach increased; the continuation of diluents, the application of compresses, wetted in cold water, to the forehead, the employment of the pediluvium, did not diminish it. The intellectual faculties continued dull, but the proper answers of the patient when they succeeded in arresting her attention, the absence of delirium, and of injection of the eyes, prevented my suspecting meningitis; the weakness supervening in the pulse contra-indicated any additional abstraction of blood. The 14th I prescribed an infusion of two drachms of coffee in six ounces of water, to be taken at different times before the febrile exacerbation; the means precedingly ordered are continued.

15th. A marked diminution of the headach, of the drowsiness and sinking of the intellectual faculties; no change in the other symptoms, unless a slight augmentation in the frequency and force of the pulse.

The 16th. Profuse perspirations. The infusion of coffee, continued to the 19th, maintains a satisfactory state of the intellectual faculties.

This young girl's complaint was very severe: the coffee does not prevent the development of the common accidents of typhus fever. Lumbrici appear in the clothes, these augment without an increase of the pain in the abdomen; prostration more considerable, cough more frequent; a crepitus developed in the left side of the chest, requiring the use of dry cupping-glasses to the part: it was only after having had several sweatings, and after presenting a large eschar on the sacrum, that the girl commenced to improve in health.

I do not think it would be more rational to attribute to the use of the coffee, the prolongation of the disease, than it would be to regard that infusion as the cause of the development of the lumbrici in the intestinal canal; this long duration is often independent of the treatment, and it is to be observed just as well in patients treated by simple mild drinks. The effect of the infusion of coffee on the headach, was too rapid and two remarkable not to have been noticed by those who attended to the case. We had too well appreciated the relief which the patient experienced by the cessation of the headach, not to have recourse to the same treatment when a similar case should present itself. Such a case soon offered itself to our practice.

Obs. 2. A carpenter, twenty-five years of age, of a strong constitution, experienced, the 22nd of July, 1832, a headach, nausea, vomiting, purging, and pains of the abdomen; he kept his bed, and applied some leeches to the abdomen; not finding himself improved, he decided, on the 30th of July, to enter the Beaujon hospital.

31st of July. When we saw him, his countenance was sunk.

tongue red, great thirst, not much pain of the abdomen ; he had nausea and purging ; the pulse not frequent, was dicrotous ; moderate heat of the skin, respiration natural. Acidulated drinks, enemata, and emollient fomentations to the abdomen, produced an amelioration, which continued for two days.

The 3rd. Prostration being more marked, and tongue dry, we ordered fifteen leeches to the right iliac region. Being more sunk the following day, and the headach continuing, and also stupefaction, we ordered eight leeches to be applied behind each ear, and cold compresses, wetted in vinegar, to be applied to the forehead. We also ordered a camphorated blister to one of the thighs, and an antimonial plaster to the right iliac region, which did not produce either rubefaction or eruption ; the patient also took a mixture for his cough, with the addition of eight drops of ether.

These were followed by considerable diminution of the cerebral symptoms, which continued two days ; after which, the symptoms were re-produced with still greater intensity : there was delirium, ravings, and comatous state ; the pulse still continuing dicrotous. Two leeches applied to the inside of each nostril, produced a copious flow of blood, and procured, during the evening and night, an advantageous change in the state of the patient : but the following day the symptoms returned with all their severity. It was impossible now to persist in antiphlogistics : the advantages which followed their use had not continued ; and moreover, the pulse was very weak and very depressed. We had then recourse to coffee as in the preceding case ; an infusion of half an ounce of the powder in eight ounces of water was administered. The effect it produced was prompt ; the pulse increased during the day, and the dullness of the intellectual faculties was much diminished.

The infusion of half an ounce of coffee and half a pint of water, was continued the following days ; the prostration, drowsiness, and headach disappeared ; the tongue became moist, thirst diminished, the abdomen remained indolent, and somewhat distended with gas ; some bilious stools of more consistence, and more abundant, succeeded the purging. The 14th, the patient took some broth, and the 28th, the use of the coffee was left off, the state of the patient being so satisfactory as to allow the use of light soups. Convalescence was established, and the patient would have been discharged cured at the end of the month of August, if a scarlet fever, which had displayed itself, had not retained him in the hospital until the middle of the next month.

The salutary influence of the infusion of coffee on the diminution of the cerebral symptoms in this patient, is too evident for us to attempt to demonstrate it. The symptoms had been for the time diminished, first of all by the use of ether in small doses, and afterwards by the epistaxis artificially produced by the aid of the leeches placed at the orifices of the nostrils ; but their return, and the increasing

weakness of the pulse, forced us to have recourse to other means. Nothing produced such a favourable effect as the coffee; for it was seen that during its employment, the tongue became moist, and that the functions of the digestive organs were so far improved, as to allow promptly of aliment being granted. It is a fact, when tonics are administered in typhoid fevers, and are well supported, the recovery is much more rapid than when numerous leeches and emollient drinks have been necessary during the treatment of the disease. As to the rest, the infusion of coffee appears to be little irritating to the stomach; employed in cases of cholera by M. Gueneau of Mussy, it was, that distinguished physician told me, retained well by the patients.

The following is a third case in which the stupor, still more intense than in the preceding cases, yielded, nevertheless, to the employment of the infusion of coffee.

Obs. 3. Delacour, a cabinet-maker, aged nineteen, of a lymphatic constitution, and rather weak, experienced at the commencement of October, 1832, a headach, accompanied with vomiting and purging. Leeches were applied to his abdomen, and he was relieved; a deviation which he made as to regimen, soon brought back all the symptoms. The patient entered Beaujon hospital, the 5th of October, with the following symptoms: countenance sunk, somewhat of a violet colour; eyes injected; coma; answers difficult and sometimes incoherent; tongue red and dry; abdomen painful; pulse frequent; respiration a little impeded, accompanied with a whizzing noise. Blood was taken from the arm; ten leeches behind each ear. Delirium during the night.

6th Oct. Same symptoms, general sensibility very obtuse. However, after having pinched the patient severely, he finally answered with sufficient precision. Twenty leeches to the epigastrium, a cataplasm to the belly.

7th. Countenance less violet; loss of sensibility still continuing; involuntary excretion of urine. Camphorated blister to one of the thighs.

8th. Diminution of the comatose state; abdomen still painful on pressure. Twenty leeches to the right iliac fossa; fomentations.

9th. Abdomen indolent, cessation of the purging; countenance little coloured; continuation of the insensibility of the skin of the extremities. It is only after prolonged and very severe pinching that the patient is aroused from his state of stupor, and briefly answers the questions addressed to him. Infusion of half an ounce of coffee in a pint of water to dissipate the cerebral collapse; application of ice to the head. During the day the patient appeared to revive, and talked.

10th. The coma and stupor returned during the night, some hours after the last cup of coffee; they continued, notwithstanding the application of ice. Infusion of half an ounce of the same powder in two pints of water.

11th. Less stupor; infusion of an ounce of coffee.

12th. General sensibility less obtuse; answers more easily; pulse less frequent; abdomen a little less painful. Infusion of two drachms only of coffee in a pint of water.

The following days the stupor gradually diminished; it was entirely dissipated on the 18th, but the abdomen still a little painful; however the tongue is moist, and the purging has not returned. A gangrenous eschar formed on the sacrum.

22nd. Febrile exacerbation.—The heaviness or delirium does not re-appear, but erysipelas is displayed near the left knee underneath the blister which had been some days before placed on the thigh of that side. Unctions with fresh lard.

The burning pain of the erysipelas diminished, but the redness invades all the leg and foot. These parts were enveloped with compresses wetted in vegeto-mineral water. Indisposition obliged me to quit the Beaujon hospital on the 24th. The typhoid affection was arrested in its progress, but the erysipelas extended in an alarming manner; the inflammation commenced to extend itself to the subjacent cellular tissue.

Although in this patient the stupor may have depended rather upon congestion, and still more upon a sanguineous stagnation of the brain, than upon a simple sympathetic reaction of the affected abdominal viscera on the head, however, they were able to testify the efficacy of the infusion of coffee in dissipating the drowsiness and dejection. It would be supposed that in increasing the circulation, particularly that of the brain, the coffee has, in that case, dissipated that stagnation of the blood which appears to impede the cerebral functions. If the momentary return of the abdominal pains was attributed to the infusion, we confess that perhaps the dose of coffee carried to an ounce in twenty-four hours, was a little too much. As to the febrile exacerbation which appeared on the 22nd, it depended on the approaching breaking out of the erysipelas; the coffee, therefore, cannot be made responsible for it; nor indeed can the development of the gangrenous eschar which supervened on the sacrum be attributed to it.

In the greatest number of cases of typhoid fever that we have had to treat, we have been upon our guard not to occupy ourselves particularly with the stupor, for that symptom generally improves at the same time that the abdominal pains diminish. However, it sometimes happens that in this disease we see the nervous system, struck with a kind of sideration, which claims special means capable of exciting the headach in suitable manner. This circumstance arising perhaps as much from the idiosyncrasy of the patients who are attacked with typhus fever, as from the cause which occasioned its development, ought not to produce more astonishment than that variety of the same affection which is relieved with more advantage by the employment of tonics than the use of emollients. It is only necessary to distinguish these cases one from the other. If the

efforts of nature often sports with our means, it would be, however, unphysiological to say that such happens in every case. That medical scepticism would be much more injurious than useful to the progress of the art. We believe then, that the stupor observed in the three patients which were the subject of these observations, may have been dissipated by other means than those which we employed; but we conceive that the infusion of coffee had unquestionably an influence upon the cessation of that symptom. The action of coffee upon the economy when in its natural state, its good effects in megrim, in narcotic stupor, and drunkenness, ought to make one believe that patients will be benefited by its use in some typhoid fevers. We believe these cases are those in which stupor predominates, and where there are not as yet any symptoms of meningitis; and those where the moderate pains of the epigastric region, the absence of vomiting and purging, and where there does not exist too developed a febrile reaction, indicate that the gastro-intestinal organ is in a fit state to support the infusion, the good effects of which we have established: only we think that two drachms (gros) to half an ounce of that powder infused in a pint of water, suitably sweetened, ought to suffice for the four-and-twenty hours, and that the moments when the febrile reaction presents itself with the least intensity ought to be preferred, for its administration.—*Bulletin General de Therapeutique.*

On the Treatment of Sciatic Neuralgia with Oil of Turpentine.—Long since we had formed the intention of entertaining our readers with a therapeutic agent, the efficacy of which experience has sufficiently established: we mean the oil of turpentine in the treatment of sciatic neuralgia. The number of rheumatic affections observed this year since the return of the severe weather compels us no longer to delay this article.

The oil of turpentine presents striking differences in its mode of action, according to the dose in which it is taken; but without speaking here of the more or less violent irritations caused by it, when it is employed pure, or in very large doses, we shall content ourselves with laying down the mode of administration, by means of which we escape the unpleasant consequences which might result from its employment, at the same time that we obtain all its happy results.

M. Martinet, who has paid particular attention to the therapeutic properties of this substance, advises that we should always combine the essence of turpentine with an excipient, for the purpose of preventing an immediate contact of this oil with the gastro-intestinal mucous membrane, and with the same object always to make the patient take after its administration a cup of some demulcent liquid, so as to diminish its action. Honey, powdered gum arabic, magnesia, are the excipients to which the preference should be given. In cases where it might be supposed that the stomach would not easily bear

the presence of oil of turpentine, we shall succeed in preventing the vomiting which may result from its use by adding a small quantity of opium to the turpentine, if it be given under the form of an opiate, or of from twenty to thirty drops of laudanum, if taken in an emulsion, or a potion.

The following are the formulæ most frequently employed by M. Martinet, and which in the hands of this physician, as of other practitioners also, who have verified the efficacy of this medicine in sciatica, have been most successful :—

Take the yoke of one egg, three drachms (gros) of oil of turpentine, two ounces of syrup of mint, one ounce of the syrup of orange flower, half a drachm of liquid laudanum, make a potion.

If a more simple prescription be desired, the following may be employed :—

Take two drachms of oil of turpentine, four ounces of mel roseat. mix. Each of these mixtures are given in the dose of three spoonfuls (*cuilleries*) every day, at an interval of about four hours.

When the particular susceptibility of the patient renders it necessary to disguise the acrid taste and penetrating odour of the turpentine, for the preceding mixture we may substitute boluses prepared with calcined magnesia, in the following manner :—

Take of turpentine one drachm, calcined magnesia one drachm : make into twelve boluses, four to be taken every day, after having first enveloped them in powdered sugar rubbed up with essential oils of mint or of lemon.

The oil of turpentine has proved efficacious in several other cases of neuralgia besides sciatica ; it must be owned that it is in this latter and in crural neuralgia, that its effects are best established. M. Martinet considers this medicine perfectly indicated when the sciatica is purely neuralgic, and when it depends neither on any organic cause, nor on inflammation of the nerve. Then be the affection chronic or acute, whatever be the date of its existence, however numerous the means may be which may have failed in curing it ; if the pain be intense, and radiates through the nerve affected, if its paroxysms are violent, it presents favourable chances of success.

The oil of turpentine, administered in the way just mentioned, is followed by phenomena peculiar to it, and which consist in a more or less intense heat, following the *trajet* of the digestive tube ; sometimes there is observed perspiration through the entire extent of the affected nerve ; this last effect is, in general, a favourable omen, and forebodes considerable amendment, or the cessation of the pain. When this medicine is administered, with the precautions above specified, we have few or no unpleasant consequences to dread ; sometimes slight purging, loss of appetite, or slight headach, a thing which goes away of itself by the mere suspension of the use of the medicine.

The curative effects of the turpentine being in general prompt, and not requiring for their establishment more than three or four

days, its use should not be continued beyond from eight to ten days; that is, more than three of the mixtures above mentioned should not be taken, they being equivalent to six or seven drachms of oil of turpentine.

If after examining the phenomena which follow the use of oil of turpentine, we endeavour to account for its action, and thereby to discover the cause of its efficacy; it is clear that this latter cannot be attributed either to alvine evacuations, or to an increase in the secretion of urine, nor to any extraordinary transpiration, for these different effects are either wanting in cases of complete cure, or are observed to take place in persons who experience no relief in their pains. This is constantly seen after purgatives, diaphoretics, and diuretics, which, though they stimulate the secretions of the intestines, the skin, and the urine, have still failed in relieving cases of sciatica, which have yielded to the use of oil of turpentine.

We shall conclude this article by a recapitulation of the observations given by M. Martinet, in the Memoir entitled—"On the Treatment of Sciatica and other Neuralgiæ by Oil of Turpentine."

Out of *seventy-three* patients, labouring, for the most part, under sciatica, or other neuralgiæ of the limbs, *fifty-eight* were cured, scil. three by frictions, and all the rest by the internal use of oil of turpentine; *ten*, two of whom gave up the treatment too soon, experienced merely a more or less permanent relief: *five* derived no benefit whatever; two of the latter had a disease of the joint, of which they died some months after.

Of these seventy-one neuralgiæ, forty were acute, and thirty-one chronic. Of the forty acute, thirty-four were cured, five were merely relieved, and one only remained in the same state. Of the thirty-one chronic cases twenty-four were cured, three were relieved, and four experienced no benefit.

Of these seventy-one neuralgiæ, thirty-three had resisted different modes of treatment previously; and out of these thirty-three, twenty-five were completely cured, four were merely relieved, and the other four remained in the same state.

Of the fifty-eight neuralgiæ completely cured by oil of turpentine, thirty-four were so in less than six days, twenty-two in less than twelve days, and two in the space of from twenty-eight to forty-five days.

Out of the fifty-eight neuralgiæ cured, there were counted forty-eight of sciatica, two of which were treated by frictions; three crural neuralgiæ, four brachial, and three facial. Of the ten neuralgiæ which were only relieved, and which were all sciatica, there were two in whom the treatment was suspended from the second day.

Lastly, out of the five where the oil of turpentine completely failed, there were four sciatica, and one crural neuralgia; two of these died of coxalgia.

In twenty-one patients there was observed a development of heat in the course of the nerve and along the affected limb, and in nine-

teen of these the cure was perfect. The two others, having suspended the treatment, were only relieved.

In eighteen there was observed heat in the digestive tube, and particularly in the stomach.

Three were seized with vomiting, and in two this was occasioned by a dose of oil of turpentine much too strong (two drachms at once.)

Three had diarrhoea, and rather acute colicky pains.

In five of them the urine was augmented. Four complained of dysuria, or of stranguary, (two had taken too strong a dose of turpentine.)

In ten a general perspiration was observed: in two only the perspiration was confined to the limb affected.

In fine, one woman was, as it were, intoxicated by the oil of turpentine, and two others experienced a pruritus over the whole body.—*Bulletin General De Therapeutique.*

A Memoir on the Fetid and Stercoral Odour given out by certain Abscesses situated in the Substance of the Abdominal Parietes, by Dance.—Having lately* sought to call the attention of practitioners to this subject, we at present propose to give an entire detail of the parts in which we have observed this remarkable phenomenon, in order to be able duly to appreciate its value, and to guard ourselves also against certain errors into which we must inevitably fall, if we refer solely to the odour of which we are going to speak. These facts are, moreover, interesting in several other respects, which we shall also point out.

CASE 1.—On the 19th of November, 1829, there was admitted into the Hotel Dieu a woman thirty-five years old, of a good constitution, who, for three weeks back, felt a fixed pain in the middle of the space separating the umbilicus from the crest of the left ilium: by degrees a tumour formed in this point, and from the entrance of the patient into hospital there was perceived there a hard engorgement, flattened, yet slightly prominent, very painful on pressure, and of the size of the palm of the hand.

This engorgement was moveable, and appeared to be connected with the abdominal parietes; the skin covering it presented, however, no unnatural colour; neither did the patient know to what cause to attribute the origin of this tumour; she had received no injury whatsoever in the part; there was no fever, nor were the functions of the intestinal canal at all disturbed. Leeches were applied at two different times to the tumour without producing any benefit. Lastly, recourse was had to some mercurial frictions, in order to effect a resolution. But insensibly the tumour approached the skin, and became prominent towards its centre, where it ultimately became soft. This process was preceded and accompanied by such acute lancinating

* Diction. de Med. Art. Abd. (Abc. de l'.)

pains, that the patient was deprived of all sleep for four consecutive nights. At last, on the 29th of November, the fluctuation was manifest on the summit of the tumour, its base was still hard, and was five inches in diameter: however an opening was made in the fluctuating point, and instantly there came out about a glass full of a thick greenish pus, diffusing a horribly fetid odour: this odour had some resemblance to that of assafoetida; at the same time neither any gas escaped, nor stercoral matters; great relief after this operation. The next day the centre of the tumour was empty, but all its circumference from the parts adjacent to the umbilicus to the crest of the ilium was covered with resisting hardnesses, as if a solid body was placed in the substance of the abdominal parietes; at the opening there ran out nothing but a serous fluid void of odour. On the following days, by the help of baths and cataplasms, these hardnesses were gradually diminished; but their total dispersion, and the cicatrization of the wound, did not take place for a considerable time: in fact it was not till the end of the following month that the patient was completely cured.

This affection is evidently a deep-seated phlegmon of the abdominal parietes, a phlegmon which, by reason of its seat between muscular layers, or resisting aponeuroses, gave rise to the very acute lancinating pains, arising from strangulation of the inflamed parts: this situation also explains the flattened form assumed by the inflammatory engorgement, the slowness with which it advanced to the external parts, and suppurated, leaving hardnesses in its circumference which were dissipated but very gradually. The purulent matter had contracted a most fetid odour, which could not be attributed to its contact with the air, since it presented this character from the very opening of the phlegmon; nor to any communication between the tumour and the intestinal canal, since there was not at the same time any escape either of gas, or of stercoral matter, and the opening was cicatrized tolerably soon. It is then to other circumstances we must attribute this odour: let it suffice for the present to establish that the phlegmon was deep-seated, and approached, probably, some portion of the intestine, though placed outside the peritoneum.

CASE 2.—A pastry-cook, aged forty-seven years, of a good constitution, fell sick without a known cause, on the 19th of April, 1829. After some general uneasiness a pleuro-pneumonia declared itself. We were called to this patient as being dispensary physician, and discovered an inflammation of the lung and pleura of the right side, which was treated in the ordinary way. Venesection was twice practised, and followed by two applications of leeches over the affected side: a blister concluded the treatment. At the end of some days the patient appeared convalescent: he got up, and continued to take nourishment: we then left him in the hope that his health would be shortly re-established, and did not see him again for a considerable time. This hope, however, did not last long: a dull pain was felt in a fixed point, commencing at the lower edge of the ribs of the right side, over the confines of the abdomen.

The patient became emaciated, having every day two febrile accessions. We were called to him two months after, towards the beginning of July : his emaciation was extreme : he had constant fever, and complained incessantly of his side, where leeches were applied, but without affording any relief. We carefully examined the point which was the seat of this constant pain, and discovered, on a level with the three last false ribs and the right hypochondrium, a diffused swelling, with gluing (*empatement*) of the integuments : there was perceived in the part, a deep-seated fluctuation. There was evidently a purulent collection, which endeavoured to make its way externally : but what was its seat ? it corresponded as well with the region of the liver as with the base of the chest ; there was no dullness, or deficiency of the respiratory murmur, except on a level with the tumefaction : every where else the sonorousness of the chest, and the respiratory murmur were natural. However, the original symptoms having being those of inflammation of the thoracic organs, we thought that it was a case of empyema confined to the base of the chest. From day to day this tumefaction increased : at length there appeared a large tumor, three inches in prominence, the base of which occupied a portion of the hypochondrium, extending upwards the breadth of four or five fingers. At this time the patient was in the most deplorable state ; emaciation increasing, and giving him the appearance of a skeleton ; continued fever, with two accessions every night ; night sweats ; colliquative diarrhœa : we considered him destined to certain death, and such also was the opinion of several of our colleagues of the dispensary, whom we called into consultation. Still one indication presented itself, that of opening the tumor which was now advancing still more towards the skin ; and we consequently applied, towards its centre, two grains of caustic potash, a method which was preferred to incision, through fear, lest the adhesions between the tumor and the peritoneum were not sufficiently established ; for it was towards the abdomen that it was most prominent, and that it must be opened. The day after, we completed the opening with a lancet, thrust in perpendicularly in the midst of the eschar ; a quantity of greenish pus instantly gushed out, thick, extremely fetid, having a smell very like garlic, sulphuretted hydrogen, or assafoetida : this discharge was succeeded by a continued running of the same matter, which diffused the same odour, which running continued for three days ; so that the entire of the liquid discharged during this space of time, might be estimated at three or four pints. On the fourth day, the external tumefaction was completely gone : there was no longer discharged more than some drops of a serous liquid without odour : sleep was returned, and the fever diminished. On the ninth day there was every amendment ; the countenance recovered its natural expression, and notwithstanding his extreme emaciation, the patient was full of strength and of hope. At the end of July, the diarrhœa and fever were completely gone, the patient was gaining flesh, and he got up from bed for some hours during the day. The fol-

lowing month his health was almost entirely re-established : still there was every day a slight discharge through the opening, which was callos, and depressed at its circumference. This discharge continued up to the March of the following year, at which period the opening was entirely closed. At this time the patient enjoyed the best health ; he had resumed his usual occupations, but he still continued subject to some attacks of cough : however the chest sounded well in every part. Since the above observations, we have had frequent opportunities of seeing this patient, who continues to enjoy the same health.

Though it appears probable from the preceding, that the enormous collection of pus in question was developed at the base of the thoracic cavity, we must still recollect that this collection was most prominent in the right hypochondrium, and that it was here it was opened, consequently in a place corresponding to the abdominal parietes, and very near the intestines, particularly the colon. We deem it necessary to establish this point here, because we consider it as calculated to explain the remarkable fetidity of the purulent matter. Not but that thoracic effusions, particularly when old, may not of themselves contract a similar odour ; but in general this odour is not so marked, and at the same time so transient, and besides it always holds out an unfavourable prognosis ; whilst here the patient's health was re-established in the most extraordinary manner after the discharge of the purulent matter. This odour, joined to the extreme emaciation of the patient, must confirm us in the unfavourable prognosis which had been given ; if not, it is no doubt that this same odour was not inherent in the disease, and was owing only to the accidental circumstance of which we have spoken. However it be, this cure is, in our opinion, one of the most remarkable instances of nature's resources in cases which appeared desperate.

CASE 3.—A servant, employed in the theatre, was addicted to spirituous potations, and being subject in consequence of this to derangement in the evacuations, fell by degrees into a state of anorexia, such that the very sight of the food was sufficient to turn his stomach. At the end of some days in this state, the patient feeling more and more disturbance in the belly, took, from his master, two spoonfuls of " Leroy's medicine ;" the result was from twelve to fifteen copious liquid stools, succeeded by some relief, which caused him to have recourse to the same purgative two days after. But this time he finds himself much worse, and the day after the following symptoms were observed : fixed pain in the epigastric region, increased by the slightest pressure ; a sensation of heat confined to this region, which, in other respects, presents no perceptible swelling ; tongue red at its edges, greyish in the centre ; great thirst ; frequency and hardness of the pulse : four applications of leeches were made to the epigastrium and anus, without much benefit ; besides emollient cataplasms over the epigastrium, demulcent drinks, &c. On the fifth day, unusual swelling in the epigastric region, which appears raised, and, as it were, breast-plated (*plastronée*) by a hard, flattened body, situate behind

the abdominal parietes ; the least touch over this part is painful ; the drinks cannot be taken except in small quantity, and at times they return to the mouth as if by regurgitation : besides all the sub-umbilical portion of the abdomen is pliant, indolent, and presents its natural form : the same degree of fever ; constipation. Venesection to the amount of two palettes ; the surface of the clot thick ; bath ; permanent cataplasm over the epigastrium. On the following days the tumefaction in the epigastrium goes on increasing ; on the increase from above downwards, from the xiphoid cartilage to the neighbourhood of the umbilicus, and laterally, to the middle of the hypochondria ; all around there is observed a sort of edematous glueing (*empâtement*) extending to the base of the chest ; the skin, however, preserves its natural colour. The least motion of the trunk, the slightest effort at cough, is accompanied with pain in the belly ; thus the patient continues motionless and constantly lying on his back, not venturing even to take a full inspiration. In other respects the expression of the countenance is natural enough, considering the severity of the disease ; the fever preserves the same intensity. (Two more blood-lettings were had recourse to.) On the eighth day there was diminution of the pain, but an increase of the tumefaction in the epigastrium, which is the seat of a very perceptible rising isochronous with the heart's pulsation, as if it were applied immediately over the ventral aorta. On the ninth day, cessation of fever, expression of the countenance sufficiently calm, less constrained in the performance of the respiratory movements ; though the tumefaction of the epigastrium is more and more considerable, there is now observed therein an obscure fluctuation. On the twelfth this fluctuation was sufficiently evident, enough to decide us on giving an exit to the suppuration ; it was necessary, however, to make a puncture half an inch in depth before getting at the matter collected ; there soon escaped a quantity of greyish pus, the fetid stench of which struck all the by-standers, and resembled that of fecal matter. After this odour the case might be supposed to be one of caries of the neighbouring bones, or some lesion of the intestines. However, the day after this odour was completely gone, the patient found himself evidently better ; but it was only at the end of a month that he completely recovered ; up to that period there was a constant running at the aperture of the tumour, around which there existed, during all this time, considerable hardness, which was very slow in being resolved.

This fact is one of the most striking examples of phlegmon developed in the substance of the abdominal parietes : for that is the seat and the limits which should be assigned to it after the examination and explanation of the symptoms. This phlegmon in reality succeeded causes which seem to have directed their action solely to the digestive mucous membrane ; such especially is the use of the drastic purgative already mentioned ; but the superficial character of the pain, its exact limitation to a point of the abdominal parietes

(the epigastric region); at a later period the tumefaction which developed itself in this region, finally, the termination of the engorgement by suppuration, and the complete re-establishment of the patient's health after the evacuation of the pus, render it certain that the inflammation of the abdominal parietes did not extend to the subjacent viscera. It is probable, however, that this inflammation affected the deepest layers of the abdominal muscles, perhaps, too, the cellular tissue external to the peritoneum; for a most acute local pain was felt for several days before any tumefaction was perceived externally. Then several phenomena presented themselves, owing to the pressure caused by this large tumour in the neighbouring viscera: there was a constraint in the respiration, because the diaphragm could be but very incompletely depressed; some pain in the attempts to cough, or in the motions of the trunk, because these motions requiring the concurrence of the abdominal muscles, could not be executed without dragging the inflamed parts; the patient was affected with regurgitation, and was unable to swallow a certain quantity of liquid, because the drinks by distending the stomach compressed the tumour from behind forwards, and in its turn, the stomach pressed by the tumour, was excited to vomiting, and forced to unload itself of the liquid which it contained. Finally, a time arrived when the pain diminished, and the general symptoms completely ceased, though the swelling increased from day to day: this period corresponds with the time when the fluctuation became manifest, and when, consequently, the suppuration retained hitherto by the different layers of the abdominal muscles ultimately got free from this obstacle; this was as if an unbridling took place, which explains the relaxation which followed. As soon as the abscess was opened, there escaped from it a liquid of an odour similar to that of fœcal matter, and from this odour one would have supposed a communication between the abscess and the intestine; the event, however, proved that such was not the case, since this odour ceased the following day, and the opening in the abscess was cicatrized after a little time, leaving, however, some hardness around it, as in the first case above given.

There is still here a circumstance similar to that of the preceding facts, a circumstance from which it must be inferred that the odour of the fœcal matter can be transmitted into phlegmons in the vicinity of the intestines without there being a communication between both. But here this last fact will prove satisfactorily that this transmission takes place even in a very high degree in the circumstances of which we speak.

CASE 4.—On the 24th of February, 1832, there was received into the hospice Cochin, a labourer, who dwelt at Montrouge, forty-two years of age, of a strong, hale constitution. He had got a fall on the right side of the body, about three months before, but without any serious injury resulting; for at the end of eight days he was in a state to resume his work, and ever since he has been in good

health. On the 19th of February, four days ago, this man was in pursuit of a person who had secretly changed his habitation, ran the entire journey from village to village to the neighbourhood of Fontainebleau, and stopped only for one short moment to take a glass of brandy: in the night he returned home oppressed with fatigue after having travelled upwards of twenty leagues. This same night a shivering followed by heat and fever, headach, feeling of general lassitude, in fine, acute pain in the right inguinal region, and in the corresponding lumbar region. The day after, and the following days, these symptoms became worse, notwithstanding a blood-letting which was had recourse to: at last the patient entered the hospital on the 4th day, in the following state:—The lower extremity of the right side slightly flexed and turned outwards, a position which cannot be changed without producing acute pains, which are felt in the groin and right side of the belly; evident swelling in both these regions. At the groin this tumefaction extends to three inches below the crural arch, and in an oblique direction from above downwards, and from without inwards, (there was no hernia); in the abdomen the same tumefaction occupies all the lumbar region from the border of the short ribs to the crest of the ilium, and from the vicinity of the lumbar vertebræ to the external edge of the rectus muscle; thence it descends obliquely over the corresponding iliac fossa, the tumefaction terminating in the groin. These different points are tense, resisting, painful on the least pressure, or from an effort to cough, a strong inspiration, or any other motion of the trunk; thus the patient speaks in an under voice, and ventures not to stir. In the groin and the other regions of the belly on the left side, nothing of this kind is observed; no swelling, tension, or pain on pressure; as also no nausea, nor vomiting, nothing particular in the urine, no pain in the testicles, no derangement in the alvine evacuations; phenomena, the absence of which we mention for the facility of the diagnosis. The general symptoms evince great prostration: the patient lies on the back; expression of exhaustion in the face; pulse frequent and small; heat of skin, with a slight icteric tint of this part, not extending, however, to the conjunctivæ.

These different symptoms appeared to us to indicate the existence of *psoritis*, and notwithstanding the apparent debility of the patient, we thought it right to have recourse to the most powerful antiphlogistics; and accordingly three palettes of blood were taken; fifty leeches were applied, thirty to the right side of the abdomen, and twenty over the inguinal region; poultices to different parts, demulcent drinks, enema, &c. On the day after the blood obtained by venesection was covered with a thick coat; the bleeding from the leeches was most copious; there was, however, but slight relief; though the right lower extremity moves with more ease, and even admits of being extended completely without much pain; though the tumefaction appears less in the groin and right side of the belly, there is constantly observed, particularly in the lumbar region, a

swelling, resistance, and pain on the least touch. The pulse presents the same characters of smallness as on yesterday; still the patient says he finds himself somewhat relieved. Thirty leeches to be applied over the lumbar region. The third day, but slight change, the lumbar region is the seat of an acute pain, and forms a rounded projection, which passes beyond the level of the crest of the ilium: all this region is dull on percussion, the remainder of the belly is soft and indolent, the pulse presents the same frequency and smallness; two natural stools. Two palettes of blood taken, blood buffed as before; twenty leeches to the lumbar region. On the fourth day great feeling of debility; still greater frequency of the pulse, which amount to 103 pulsations in the minute; the same tension and prominence in the lumbar region; the inguinal space itself is still the seat of manifest pain and swelling; the motions of the limbs are not more painful; its position no longer as fixed as the first day; the patient extends it with sufficient ease. Bleeding suspended; permanent cataplasms over the painful parts. On the fifth and sixth days the lumbar swelling increases more and more; an œdematous glueing (*empatement*) takes possession of all this region, in the depth of which fluctuation is perceptible. In the groin also the swelling is increasing without the skin as yet presenting any change of colour; the crural artery appears pushed forward; its pulsations are readily distinguished by the naked eye: in other respects the patient says that he is a little better; the same treatment. The seventh day, the debility and prostration greater than on the preceding days; pulse weak and 120 per minute; fluctuation more marked in the lumbar region, which, combined with the aggravation of the general symptoms, determined us in puncturing the tumor a little above and behind the crest of the ilium; but though the bistoury penetrated about an inch deep, there came out but a little blood and no pus. Let us remark that from the same day, and before the operation, there was perceived in different points of the tumour, particularly in the groin, a crepitation announcing the development of some gases in its interior; the same treatment. On the eighth, no change in the volume of the lumbar tumor: only the skin covering this region has assumed a dark red tint, and through the puncture made yesterday there has escaped a fluid of a reddish, whitish colour, of a fetid odour, like to that of *fæces*; besides, when pressure is made on the right inguinal region, there is produced in this point a loud gurgling, an extensive burrow lying beneath filled with gas and fluids. Besides, the patient is dull, and as if siderated (*sictré*); colour of his skin is yellow, his speech weak, his pulse small and unresisting; decoction of quinine, compresses steeped in camphorated spirit over the tumour. On the ninth day, his general state the same. Through the opening made in the tumour there has escaped this day a considerable quantity of a reddish, sanious liquid, having entirely the odour of *fæces*: some gases, equally fetid, escaped at the same time, besides the gurgling is no longer heard in the inguinal region; wine and water, decoc-

tion of quinquina, soup. The tenth day, prostration increasing, pulse sinking, and 120; diminution of the lumbar swelling; the opening made in it yielded, as on yesterday, an abundant quantity of reddish fluid, which appears to be a liquid residue of fæcal matter; and the more still as the odour from it is entirely that of fæces, and it adheres to the fingers, and diffuses itself to a considerable distance over the ward. In the groin there is again discovered, on pressure, a loud gurgling, and as it were, metallic; percussion is equally loud there, and the skin covering this part presents a violet tint, pale, as if threatened with gangrene. The eleventh day, bilious vomiting, general meteorism of the abdomen, dark yellowish colour of the entire surface of the skin, hurried respiration; pulse more and more sinking; the same discharge of a liquid fæcal both in smell and appearance, the same gurgling in the inguinal region. Death on the twelfth day, sixteen days from the invasion of the disease.

Examination of the Body twenty-four hours after Death.—Body appeared quite fresh, muscles firm, and of a fine red colour; cadaveric rigidity considerable. The head was not opened: in the chest, the lungs, heart, and large blood vessels were in the most natural state: in the abdomen the peritoneum was sound through its entire extent, even in the right lumbar region; its surface presented a natural aspect and smoothness; it contained neither effusion nor false membranes; the intestines, particularly the arch of the colon, were distended with gases. *Principal alteration.*—All the space comprehended posteriorly by the right lumbar region and the right iliac fossa was converted into a vast putrid mass, which extended from the vault of the diaphragm to the lesser trochanter, passing under the crural arch. This mass had, as its posterior parietes, the quadratus lumborum, psoas, and iliac muscles, which muscles were divested of their cellular and aponeurotic membranes, and changed into a dark coloured pap, similar to what the spleen is sometimes reduced to. It was principally on the iliac muscle that this gangrenous softening was observable; for, with the exception of some of its deepest-seated fibres, all the fleshy body of the muscle gave way on the slightest tearing; the quadratus lumborum was almost equally disorganized, the portion of the psoas, which immediately goes along the upper aperture of the pelvis was the least altered. From the iliac region the abscess insinuated itself under the crural arch, following the tendon common to the psoas and iliacus muscles, and terminating at the small trochanter, with this tendon which itself was greyish and softened; there we observed a considerable *cul de sac*. The cavity of this abscess was traversed by some cellular bands of a dark grey colour, and lined immediately by a pulpy layer of the same appearance as the blackish pap contained in its interior. It was not, in fact, real pus which it contained, but a reddish sanies, which seemed to be rather the result of the breaking up of the muscles, than a purulent secretion. However, outside the abscess the muscular layers which formed its external boundary were here and there in-

filtrated with pus; there was likewise some between the oblique muscles and the transverse muscle of the abdomen, but not under the skin. On the internal boundary of the abscess were the cæcum and ascending colon almost naked, and covered merely with a soft bed of cellular tissue infiltrated with pus; there was, however, no communication between these intestines and the abscess, a thing which was sought for with the greatest care, as we shall state. 1°. Having first forcibly pressed the gases contained in the cæcum and colon, in the direction of the abscess, there escaped into the cavity of the latter neither gas nor fæces. 2°. Having then divided these intestines, cleaned and carefully examined their surface, we discovered there neither traces of ulceration and perforation, nor even mere redness. 3°. Having finally removed these intestines, the coats of which were exposed on a table, and subjected to a new examination, we could not even then discover the slightest lesion. 4°. Besides the cæcum and colon contained only ordinary fæces, and a something which resembled the putrid pap of the abscess. We dwell on these proofs, because they are in themselves one of the most convincing to establish the opinion which we lay down, and if it were necessary to corroborate them still further, we would say that the matters which we state were seen by several other witnesses worthy of credit. With respect to the opening made in the lumbar tumour, it penetrated directly into the abscess, and went no farther. Also, all the intestinal canal, the stomach, the liver, the kidneys, particularly the right, as well as the bladder, were in the normal state. Among all these viscera the spleen alone presented a slight degree of softening.

Here again is an instance of a purulent abscess which diffused the odour of the fæces to a very great degree, without there being any communication with the intestine. Who would not, however, have affirmed, during the life of the subject, that this communication existed? The odour of the fluid furnished by the abscess, even the appearance of this fluid, the gases which escaped at the same time, the gurgling which existed, all announced that the fæcal matters had penetrated this abscess, either from destruction of the coats of the intestine, or in consequence of the puncture made in the external tumour. We in fact were afraid that this puncture had penetrated too far, and nothing but a post mortem examination could remove our doubts in this respect, and tranquillize our minds. It is now, however, well proved that the fæcal odour yielded by abscesses in the neighbourhood of the intestines may depend merely on imbibition, or transudation of the stercoral matters through the coats of these same intestines. But we shall soon return to this subject, after having laid down all the developments brought by the preceding fact; for in this fact we are considering a malady sufficiently rare to make us seize the opportunity of studying it. This is the disease that has been termed *psoriasis*, not only because it affects the cellular tissue which accompanies the psoas muscle, as is generally thought, but because it may involve directly the psoas and iliacus muscle, as

we see by the preceding observation. The brownish softening which these muscles had undergone proves sufficiently that they had participated in the inflammation as much, and even more than the surrounding cellular tissue; for there was not any purulent secretion, properly speaking, but a sort of breaking up of muscle, which flowed under the form of a liquid similar to the liquid that flesh was washed in; this is really the pus which the organization of the muscles allows of. This alteration is so much the more remarkable, as it is extremely rare to see the inflammation seize on organs of motion, and produce in them a disorganization similar to what we have observed. But whence can come this predilection of inflammation, with similar effects for the muscles in question? The cause of it may perhaps be found in the forced exercise to which these same muscles are subjected in several circumstances of life. Destined particularly to fix the pelvis, and to move the thigh, they are, with respect to this volume and their number, those which have the heaviest burden to support, and which are most fatigued in standing and walking; let us recollect, in fact, that it was at the end of a very violent and long continued journey that our patient was attacked with the affection in question, and the right side of the body being that which is most affected under such exercise, was the only one attacked. Be that as it may, this affection, after the symptoms common to many acute diseases, is soon marked by a most acute pain, following exactly the course of the psoas and iliacus muscles, with slight retraction and rotation of the thigh outwards. This position being that which these muscles impress on the limb when they contract, and besides not being capable of changing without causing an increase in the pain, already announced what was the seat of the disease. Soon some tumefaction manifested itself, not only in the right lumbar and iliac regions, but also in the corresponding groin, as far as the level, and in the direction of the tendinous insertion of the preceding muscles into the small trochanter, another proof that the disease affected these same muscles. The remainder of the abdomen was in other respects soft and well formed, and there was no symptom connected with an affection of the neighbouring viscera, such as the liver, kidney, bladder, or even the peritoneum; a third proof, also, confirmatory of the seat of the disease, though still it was negative. To these local phenomena were added a fever, rather brisk, and particularly the symptoms of a rapid prostration which increased from day to day. One would say that the individual, after the extreme fatigue which he had experienced, fell into a state similar to that of foundered animals, and the particular alteration of the psoas and iliacus muscles gave some countenance to this opinion. The other muscles had, however, preserved their natural consistence; the cadaveric rigidity which appeared after death, was very considerable indeed; a circumstance which still further obliges us to consider this insulated alteration of the psoas and iliacus muscles as a direct effect of inflammation. Our treatment must base itself on this idea; but though it was employed with

vigour, its effects had no useful influence on the progress of the disease and its fatal consequences; farther, the patient became weakened from day to day, and this prostration obliged us to suspend a line of treatment hitherto ineffectual. Could this obstinate resistance of the disease be owing to the intensity of the inflammation, or to its particular character, which had a manifest tendency to gangrene? this is a question which we dare not answer: on one side the acuteness of the pain, the phlegmonous character of the swelling, announce a decided inflammation; but on the other side, the extreme prostration of the patient, the development of the putrid gases in the abscess, &c., seem to indicate an affection of a different nature. Did the vicinity of the intestine concur in giving this character to the inflammation? this is what seems to us most probable, from the odour given out by the abscess. But this is quite sufficient with respect to this case: let us now come to the conclusions to be deduced from the preceding facts, under the point of view in which we have presented them.

In all these facts, the question is regarding inflammations and suppurations, developed in the substance of the abdominal parietes in the vicinity of the intestines, and without these intestines being involved in the disease; nevertheless, the suppuration presented in all these cases a most sensible fœtid odour, resembling that of assafœtida, sulphuretted hydrogen, and fœcal matter; in one of these cases, there even escaped, through the opening of the abscess, some gases, which diffused a similar odour. The rapid cicatrization of these abscesses, none of which remained fistulous for the first three cases, nor yielded fœcal matter properly so called, evidently announces that the cavity of the intestines did not communicate with them; the direct proof of this fact is to be found also in the fourth case, which presented to us in the highest degree the existence of this fœcal odour, though the most minute anatomical researches could not discover any lesion in the intestine. This odour appears, moreover, to approach that of stercoral matter, more nearly in proportion as the purulent abscess more closely approximates the large intestine, which may be still further inferred from case fourth, in which the abscess was separated from the colon, only by the mere tunics of the viscus, and the fœcal halitus was most manifest. But the fact of the existence of the stercoral odour, without communicating with the intestine, seems to us still more important to be known; for this odour is sometimes so marked that one would not hesitate in considering it to arise directly from the intestine, and consequently in admitting a perforation of this canal. With respect to this matter we may state, that most of the deep-seated abscesses developed at the margin of the anus, diffuse a similar odour, from which, it is generally inferred, that the rectum is perforated, and that a complete fistula in ano is about to take place; but it is probable that these abscesses are, in many instances, similar to those we have been speaking of.

It must then be admitted that the fœcal odour may be transmit-

ted through the uninjured coats of the intestines, either by imbibition or transudation, which favours no doubt the inflammation which passes to the vicinity of these viscera; this cause of fetidity for certain abscesses being known, the diagnosis and prognosis must be facilitated thereby; for notwithstanding this fetidity, we shall not pronounce the disease either more extensive or more severe than it really is.—*Archiv. Gen. de Med.*

SURGERY.

Death from the Entrance of Air into the Veins during an Operation.—Without entering into any detail of the nature of the tumour or of the manipulation of the operation, we shall only say, that at the moment that M. Roux had lifted up the tumour for the purpose of facilitating so minute a dissection, suddenly a sort of whistling noise was heard, like that produced by the entrance of air into the empty receiver of an air-pump. At the same moment the patient uttered a plaintive cry, and became greatly agitated; the pulsations of the heart were hurried, the pulse became weak, the respiration was long and laboured, and at length, after one long inspiration, followed by a short and hasty expiration, symptoms of approaching death appeared.

M. Roux immediately pressed his fingers on the orifice of the open vein, caused the region of the precordia to be rubbed, water to be dashed on the face, and the nostrils to be tickled with a feather impregnated with ammonia. After some minutes the pulsations of the heart were again perceptible, respiration and circulation were restored; the patient was able to mutter indistinctly; a large quantity of mucus escaped by the commissure of the lips; finally, speech was perfectly restored.

M. Roux having tied some vessels, discontinued the dissection, preferring the attempt to separate the tumour by a double ligature. Every thing went on well until the morning of the seventh day, when it appears the patient suffered from oppression, difficulty of speech, then from coma: and died during the night.

Examination after Death.—The inspection of the wound showed that the tumour had been situated immediately on the cellular sheath that surrounds the common carotid artery, jugular vein, and pneumogastric nerve. The internal jugular vein had been wounded transversely, its inferior aperture gaping, and its walls thickened. A probe introduced into its cavity passed into the subclavian vein. The carotid and the eighth pair of nerves were uninjured. The bronchial cells at the right side congested and filled with frothy serum; the left lung less congested; emphysematous spots observable under the pulmonary pleura. The cavities of the heart empty. On punctur-

ing the thoracic and abdominal aorta in different places a great many bubbles of air escaped mixed with bloody serum, and the same could be observed, but in less quantity, in the iliac arteries.

This case may be added to the two detailed in the thesis of Dr. Piedaguel, with this difference, however, that in this one death did not occur so suddenly. Was this occasioned by a very small quantity of air being permitted to pass into the jugular vein by the precaution of M. Roux placing his fingers on the wounded vessel, or was the fatal event which occurred so suddenly on the seventh day, and after the final removal of the tumour by ligature, to be attributed to a new introduction of air into the inferior section of the vessel still remaining gaping on the surface of the wound?

The pulmonary emphysema and the presence of air in the large arterial trunks render this latter opinion sufficiently plausible; death supervened, however, without being preceded with that sibilous breathing said to be so characteristic, and those other rapid symptoms which have indicated its approach in similar cases. It is needless to attempt to discuss the opinions of Bichat and others, as to the manner in which death is produced by the introduction of air into the veins; there are some obscurities on this point that can only be removed by new facts and further experiments.

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